UNIV OF
TORONTO
LIBRARY

Physical &
Applied Sci.
Serials

TN
1
S13
v.21
pt.1

Physical & Applied Sci. Serials

INDEX

- - TO - -

SOUTH AFRICAN MINING JOURNAL,

JOHANNESBURG.

Vol. IX. Part 2. SEPTEMBER 9th, 1911, to March 2nd, 1912.

Defective - vol. - Contains only from Jan 6 - Mar. 2/12.

ANALYSIS OF INDEX.

List of Principal Headings in the following Index, with pages on which they may be found.

	PAGE		PAGE		PAGE
ANNUAL AND EXTRAORDINARY GENERAL MEETINGS AND REPORTS	i,-ii.	DIVIDENDS	ii.	MONTHLY REPORTS	v.
CONTRIBUTED ARTICLES	ii.	GENERAL INDEX	ii -iv.	QUARTERLY REPORTS	v.
CORRESPONDENCE	ii.	ILLUSTRATIONS AND MAPS	iv.	SPECIAL ARTICLES	v.-vi.
		LEADING ARTICLES	iv.-v.	STATISTICS	v.-vii.

ANNUAL AND EXTRAORDINARY GENERAL MEETINGS AND REPORTS.

Abercorn Banket, 15
African Banking Corporation, 729
African and European Investment Co., 589
African Life Assurance, 961
Afrikander Proprietary, 136
Amalgamated Properties of Rhodesia, 873
Anglo-French Matabeleland, 687
Ankavandra Oil, 316
Appingendam Tin, 524
Associated Portland Cement Manufacturers, (1900), 389

Bechuanaland Protectorate, 600
Beira Railway, 696
Belingwe Gold Reef, 717
Black Sands Reduction Co., 723
Blinkwater Railway Co., 651
Breyten Collieries, 819
Brick & Potteries Co., 197
Bulfontein Mine, 842
Bushveld Tin, 658

Cape Electric Trams, 353
Certificated (S.A.) Mechanical Engineers' Association, 811
Charterland & General Exploration & Finance Co., 655
Chicago-Gaika Development, 875, 952
Claremont Mines, 948
Closer Union Options, Ltd., 596
Clydesdale Collieries, 148
Cold Storage Trust 696
Consolidated Main Reef 34
Consolidated Mines Selection 293
Coronation Collieries 36

Daggafontein G.M. Co., 499, 636
Daggafontein Prospecting Syndicate, 619
De Beers Dynamite Factory, 623
Delagoa Bay Colliery, 472
Dick Kerr & Co., 388
Dundee Coal Co., 293
Dunlop Company, 729

East Rand Gold, Coal & Estate Co., 112
E.R.P.M., 499
East Rietfontein Syndicate, 806
Elandsfontein Estate, 486
Enterprise G.M. & Estates Co., 573, 687
Enterprise Syndicate, Ltd., 577

Falcon Mines, 617
Ferranti, Ltd., 311
Ferreira Deep, 552
Fortuna Investments, Ltd., 226
Fraser & Chalmers, Ltd., 583

Gaika G.M. Co., 617
Grant Mines, 381, 575
Great Britain G.M. and Estates Co., 99

Hay G.M. Co., 577, 651
Hoekplaats G.M. Syndicate, 407
Hulett & Sons, Ltd., 696

Inhambane Oil Co., 488

Johannesburg Board of Executors, 470
Johannesburg Consolidated, 282
Jubilee G.M. Co., 934
Jumpers G.M., 246

Kings' Kraal Syndicate, Ltd., 298
Klipspruit Gold, 10
Knight's Deep, 317
Kroonstad Coal Estate, 110

Lace Proprietary Mines, 472
Langlaagte Estates, 58, 89, 776
London & Rhodesian Mining & Land Co., 690
Louis Moore G.M. Co., 650

Malgus Diamonds, 23
Main Reef West, 35
Memba Minerals, 677
Messina Development Co., Ltd., 608, 667
McCreedy Tins, 99, 116
Midas Deep, 566
Moody's Gold Mining and Exploration Co., 142
Morven (Rhodesia Co.), 655
Mozambique Co., 226

Natal Bank, 966
National Diamonds, 374, 904
Navigation Collieries 266
New Districts Development Co., 589
New Minerva Syndicate, 902
New Modderfontein, 66
North Charterland Exploration, 612
North Kimberley Diamonds 673
Norwich Union Life Insurance Society, 917
Nourse Mines, 212

Oceana Development, 10
Orange Grove Estate, 495
Otavi Mines and Railway, 294

Pretoria Copper & Tin Fields, 939

Rand Klip, Ltd., 99
Rand Mines Power Supply Co., 959
Randfontein Central, 775
Randfontain Estates, 777

3,573
9/3/14

Rex Gold Mine, 674
Rhodesia Asbestos Co., Ltd., 716
Rhodesia Esperanza, 617
Romola Nigel, 509

Selukwe Columbia, 614
Seta Diamonds, 326
Simmer & Jack East, 292, 318
Simmer & Jack, 211
Solomon's Temple Tins, 370
South African Building Society, 765
South African & General Investment Co., 294
South African Institute of Electrical Engineers, 763
South African Option Syndicate, 612
South African Prospecting and Concessions Syndicate, 687
South African Real Estate Trust, Ltd., 33, 295
South African Gold Trust, 805
South Deep, Ltd., 819
South-East Africa, Ltd., 712
Southern Development Co., 44
Southern Freeholds, Ltd., 819
Spitzkop Farm Gold Co., 648
Standard Bank of S.A., 245, 275
Standard Oil Co. of S.A., 467
Stuttaford & Co., Ltd., 352
St. George's Coal Co., 932
Sub Nigel, 211
Surprise Diamonds, 520
Surprise G.M. Co., 575
Swaziland Corporation, 678
Swaziland Protectorate, 600
Swazi Tins, 67

Tati Concessions, 687, 724
Transvaal Gold Mining Estates, 280
Triumph Diamonds, 256

Uganda Railway, 148
Umbandini Concessions, 75
United African Explorations, 14
United African Lands, 690
United Excelsior Mines, 616
United Rhodesian Gold Fields, 617

Van Ryn Deep. 499
Vereeniging Estates, 473
Vryheid (Natal) Coal, 495

Wanbie Colliery, 658
Waterberg G.M. Co., 419
Wildebeestfontein Coal Syndicate, 572
Witbank Colliery, 319
Witwatersrand G.M. Co., 567
Wolhuter Gold Mines, 773

Zaaiplaats Tin, 68

CONTRIBUTED ARTICLES.

Abolition of Gold Reserves, advocated (Occasional Correspondent), 406
Amsterdam Diamond Industry To-day, The (Mahin), 10
Ancient Mine Workings in the Transvaal (Trevor), 758, 792

Belt Tightener, The (Robertson), 339
Bloemhof and Mooifontein Diamond Diggings (Harger), 363, 401, 410

Combustion of Coal (Austin), 714, 757
Current and Power Factor in Induction Motors (Heather), 713

Determination of Gold and Silver in Working Cyanide Solutions (Bettel), 795

Economics of Tube Milling (Ball), 76, 147, 186, 229, 259

Geology of the Rand (Horwood), 867, 903
Geology of the Witwatersrand (N. E. B.), 441, 560

Losses in Cyanidation (Julian), 336, 382, 492

Manufacture of Nitrogen Compounds by Electricity (Kilburn Scott), 227
Manufacture of Steel in S.A. from Scrap, The (Smith), 905

Olver's Geology, Mr. (Olver), 520
Olver's Geology Criticized (N. E. B.), 258

Progress in Cyanidation of Gold and Silver Ores in 1911 (James) 834, 869, 901, 945

Recent Developments in Diamond Mining Machinery (Tupper), 81
Review of Mining in Rhodesia, A. (Mennell), 83, 155

Shape of a Shaft, The (Heriot), 759
Stagnation in Rand Mining Methods (Blane), 865

Tailings Elevators on a Dump, A (Boericke), 693
Tailings, Wheels, and Pumps (Robertson), 657
Transvaal Coal: Value for export Purposes (Moseley), 111, 149
Treatment of Accumulated Slimes (Bettel), 745, 801

Value of Transvaal Coal for Export Purposes (Moseley), 78
Ventilation and the Prevention of Dust on the Rand (Martin), 333

Water Cure for the Dust Evil (Ford), 833

CORRESPONDENCE AND DISCUSSION.

Adair Usher Process, 447, 493
Air Feed Hammer Drills, 196
Anglo-German Tins, Ltd., 650
Annual Meetings in London, 680
Aymard's Outburst in the Lancet, Dr., 494
Boreholes for Sand Filling, 267

Cinderella Consolidated and the 8 hours' day, 953
Circular vs. Rectangular Shafts, 839, 871

City Deep, 411
Collision on the Witbank Line, The Recent, 18

Colour and the Labour Question, 373
Comparison of Winding Costs, 233

Defects in Gold Law, 447
Diamond Deposits (Coastal) of German S.W. Africa, 121
Diamond Mining Machinery, 121
Do our Auditors shirk their Work ? 953
Drill Steel and Drill Sharpening, 157, 267, 411
Dust Question, The, 578

Farm "London," The, 650

Geology of the W.W. Rand, 719, 754
Globe and Phoenix Metallurgy, 88

Hammer Drills, 233
Hardinge Conical Mill, The, 158, 267, 607, 650
Heroine G.M. Co., 196
High Duty Gravity Stamp Mills, 346, 541

Insecurity of Employment on the Mines, 374
Invention for Cure of Miners, Phthisis, 805

Johannesburg Consolidated, 754

Koh-i-norr Diamonds, 680

"London" Diamonds, 720

Memorial to Inventors of the Cyanide Process, 578
Metallurgical Practice at the Globe and Phoenix, 157
Mining Exhibition, Proposed, 411
Mooifontein Diamonds, 754

Nigel G.M. Co., 157
Nyassa Co., 650

Olver's Geology, Mr. J. S., 493

Penwith Syndicate, 196, 233

Railway Collisions, 158
Rand Company Meetings, 680, 719
Rand Crushing Plants :,Economics of, 122
Rand Geology, 680

St. Andrew's College, 346
Sand Filling on the Mines, 346
"Small Men," How not to Help, 121
Steel Trade Question, A, 373
Stope Drills, 88
Stuart Martin, Mr., and the Dust Question, 373

Time Wasting Underground, 196
Tin Fields, The, 871

Ventilation of Mines and Prevention of Dust, 541, 805
Victoria Gold Mines, Ltd., 680

Water Cure for the Dust Evil, 909

Zaaiplaats Tin, 373

DIVIDENDS.

Cape Copper Co., 471
Cassel Coal, 570
Central Mining and Investment, 23
Charter Trust and Agency, 716

De Beers' Consolidated Mines, 120, 384
Durban Roodepoort G.M., 499

German Colonial Co., 42
Griqualand West Diamonds, 269

Langlaagte Estate, 638

May Consolidated, 520
Meyer and Charlton, 514

Natal Land and Colonization Co., 120
New Heriot G.M. Co., 368
Nourse Mines, 734

Premier Diamonds, 144, 180, 579

Sheba G.M. Co., 906
S. African Breweries, 471

Standard Bank of S.A., 93
Swaziland Tin, 562

Transvaal Coal Trust 568
Transvaal G.M. Estates, 88, 110

Van Ryn G.M. Estates, 514

Zaaiplaats Tin, 724

GENERAL INDEX.

Acorn Gold Mines, 55
Additions and Alterations, 628
African Agricultural Estates, Co., Ltd., 663
African Freehold Coal Lands, 467
Agricultural Demonstration Trains, 623
Agricultural Co-operative Union, 813
Alluvial Diamonds, 82
Amalgamated Properties of Rhodesia, 687
Amatongaland Rubber, 724
Anglo-French Kaffir Syndicate, 485
Anglo-German Tins, 519, 783, 939
Anniversary Number, Our Twenty First, 817, 851, 877
Arkansas Diamond Field, The, 840
Authorized Explosives, 495
Aviation on the Rand, 816
Automobile Notes, 31, 65, 95, 133, 167, 207, 243, 277, 315, 355, 391, 427, 469, 507, 551, 587, 625, 665, 699, 733, 769, 815, 849 885, 921, 969
Axion Alluvial Diamond Fields, 178

Barberton Activity, 53, 148
Bechuanaland Copper Co., 266
Bechuanaland Diamonds, 45
Belgo-German Co., 838
Benoni Consolidated, 437
Benoni Venture Syndicate, Ltd., 872
Blaaubosch Diamonds, 438
Bloemhof Diggings, 23, 232, 443, 607
Books Reviewed, 23, 852, 952
Brakpan Mines, 566
Breakdown of Electrical Machinery, 423
B.S.A. Co.'s Capital, 415
B.S.A. Co. New Offshoot, 655
British Trade with S. Africa Information Bureau, 425
Bubola Process, The 771
Bursaries, S.A. School of Mines, 678

Cam and Motor Mines, 156, 265, 341, 415, 498, 617, 838
Cape Copper Railway, 728
Cape Government Stocks, 93
Cape Tin, 761
Cape Town as a Port for Provisioning Ships, 394
Cason Overlap Values, 258
Change of Name, 965
Chingwena Gold Fields, 192
City Deep, 579
Coal Contracts, 961
Coal Cutting Machinery, 622
Coaling Appliances at Durban, 210
Coast Rebates, 963
Cold Storage Trust, 695
Colliery Manager in India, The, 950
Colonial Trust Corporation, Ltd., 442
Commercial Congress, 241
Companies in Jeopardy, 353, 913
Companies' Regulations, 328
Comparison of Winding Costs, 463
Concrete and Steel, Composite Columns of, 809
Congo Diamonds, 930
Congress of Chambers of Commerce, 63
Cotton Cultivation, 313
Correction, A 577
Cotton Experiment, 93
Criterion Gold Mines, Ltd., The, 119
Crown Lands Minerals, 319
Cyferfontein, 46

Dairy Instructors for the Union, 734
De Beers' and Koffyfontein Mines, 12
De Beers vs. Chartered Co., 498,
Defunct Companies, 165, 966
Delagoa Bay Progress, 353, 388,
Diamond Fields, The, 23
Diamonds in Rhodesia, 842
Diamond Outlook, The, 327
Diamond Proprietary Mines, 486
Doornkop Proclaimed, 749
Durban Whaling Co., 27
Dynamite and Railway Rates, 623

East Rand Mining Estates, 439
East Rand Proprietary Mines, 20, 46, 460, 866, 930
Eileen Alannah, 379, 413
Eland Diamonds, 566
Elder Dempster Line and S.A. Trade, 813
Eldorado Banket, 801
Electric Ignition, 393
Electric Steel Industry, 237
Electrical Accidents in Mines, 349
Electrical Separators, 234
Electrical Winding Costs Compared, 125
Electricity in Mining, 463, 661, 846
Elmore Vacuum Process, The, 858
Empress, Palmeira, 303, 451
Enterprise Tin, 85
Exploring Land and Minerals, 379
Extraordinary and Special Resolutions, 628

Falcon Mines, 85, 151, 232, 303
Farms Proclaimed, 684
Farrar, Sir Geo.: Interviewed, 677
Fatalities in Mines, 746
Fibre Plant, A New, 235, 695
Fixation of Atmospheric Nitrogen by Electricity, 424
Foreign Companies Registered, 165, 628, 965
Frank Smith Diamonds, 115, 601, 754
French Bobs, 857
Fruit Export, 93
Future Engineering Industries in S.A., 463

Gaika G.M. Co., 341, 655
Gem Market, The, 838
German Diamond Regie, 180
German Progress in Africa, 695
Giant Mines, 119, 341, 452
Globe & Phœnix, 5[illegible], 341
Gold Copper Treatment, [illegible]03
Government Mining Areas, 830
Grain Elevators for S. Africa, 271
Great Eastern Collieries, 381
Grootrivier Tin, 416

Hout Bay Manganese, 126
Hunter's Road Syndicate, 119, 416

Industries Commissions Report, 501
Inez Reef, 439
Insiza Tin, 117
International Cyanide Trust, The 79
Iron Industry, The, 404
Isamungu Gold Reefs, 195

Johannesburg Gas Engine Failure, The, 387
Jumbo G.M., 232, 305

Kafir Tin, 384
Kafue Copper Development, 381
Kamfersdam Diamonds, 410
Katanga Copper, 266
Katanga, A New Mine in, 55
Kildonan Goldfield Sutherlandshire, 55
Kimberley (Mashonaland) Gold, 65
Kilo Gold Mining Co., 266
Kimberley North Diamonds, 438
Kinemacolor (S.A.), Ltd., 882
King Solomon's Mines, 687
Kleinfontein Power Supply, 748
Kleinfontein Estates, 195
Klerksdorp Electric Lighting Scheme, 351
Klipwal Flotation, New, 295
Klipwal Pegging, 739
Knight Central, 520
Komati Mines, 568
Kromellenboog Diamond Co., 864

Labour Position in Rhodesia, The, 85
Labour shortage in Rhodesia, 119
Labour, The Struggle for, 600
Labour Supply, Natal's, 163, 549
Largest Diamond Mine in South Africa, 783
Linseed from Rhodesia, 63
Liquidations, 165, 241, 358, 684, 731, 767, 965
Lomah Stoessel, 232, 266, 614
London Diamond & Estate Co., 488
London & Rhodesian Mining & Lands Co., 232
Longlands, Good Find at, 291
Lonely Reef G.M. Co., 191

Machavie G.M. Co., 56, 292
Mac Mac Syndicate, 75
Madagascar, Potentialities of, 239
Mail Contract, The, 27
Maize Export, Sir T. Price's Report on, 275
Malgo Developing Syndicate, 262
Mali Dyke G.M., 189
Marla (Rhodesia) Syndicate, 680
Mashonaland Mining, 85
Masterpiece Mine, The, 119
Mechanical Haulage Jockey, New, 387
Mica, The Market for, 755
Middledrift Diamond Diggings, 219
Mine Telephones, 61
Mine Signalling and the New Government Regulations, 875
Miner's Deal, A New, 349
Miners' Phthisis, 930
Mining Concessions, 838
Mining Questions and the Union Parliament, 866
Misrepresentation in Trade, 696
Mocambique Labour Regulations, 447
Modderfontein "B", 219, 486
Modderkraal Affairs, 638, 690.;,
Mooifontein, 23, 712
Mooifontein Alluvial Diamond Diggings, 143, 409
Mooifontein Misconceptions, 439
Mortality on Rhodesian Mines, 303
Mount Ayliff Copper, 364
Mount Morgan, 75

Natal Bank, Ltd., 765
Natal Export Trade, 204
Natal Geological Survey, 436
Natal Gold Mines, 749
Natal Industries, 964
Natal Mining and Commerce, 29
National Bank of S.A., 729
National Diamond Syndicate, 148 326, 636
National Options Syndicate, 581
Native Labour, 524
National Gas, 666
New Alluvial Diggings (Goedgenoeg), 384, 439
New Cape Companies, 767, 965
New Companies, 165, 241, 358, 584, 628, 734, 965
New Companies Registered in London, 817, 872
New Districts Development Co., 384
New Found-out Mines, 191, 381, 498
New Kleinfontein, 572
New Labour Tax Ordinance, 1911, 341
New Land Bank, 963
New Mineral, Alleged, 253
New Northern Rhodesia Administration, 16
New Rand, Ltd., 269, 416
New Randt Reefs, 498
New Reitfontein Estate Gold Mines, Ltd., 655
New Rhodesian Mines, Ltd., 15, 85
New Rhodesian Companies, 85, 232, 319
New Rhodesian Development Co., 381
New Star Diamond Mine, 44, 755
New South Wales Diamonds, 122
New Transvaal Chemical Co., 745
New Unified, 784
Nigel G.M. Co., 122, 367
Nitrogen from the Air, 203
N'Kandhla Mines, 838
Northern Rhodesia Mines, 685
Northern Star G.M. Co., 191 266
Nyassa Labour, 191
Nyasoland Minerals, 405

Odzi Belt, The, 303
Oil Discovery Reported in Griqualand East, 760
Olga G.M. Syndicate, 879
Oshoek Tin, 405
Ottoshoop Mining, 932
Outlook G.M. Co., 436, 481
Oxygen-Acetylene Process of Welding, The, 161

Patents, Commission on, 204
Patents in 1911, 765
Peel's Rhodesian, 232
Penhalonga G.M. Co., 265, 685
Penlerick's Case, Mr., 954
Petrol Electric Railway Coach for S.A. ,126
Piggs Peak Development Co., 619
Pilgrims Creek G.M. Co., 418
Pilgrims Rest Activity, 6, 225
Pneumatogen Rescue Apparatus, The, 906, 944
Pniel Diamonds, 309, 714
Pongola Gold Fields, The, 110, 404
Ports Commission, 29, 240
Power Transmission by Rope, 809
Proclamation of Farm "London," 601
Proclaimed Farms, 585, 684
Producer, Gas, 199
Profit Tax Assessments, 943
Promoter and Botha Claims, 617-
Prospectuses, 165, 628, 965
Pulsator, The New, at Jagersfontein, 115
Pulverised Fuel, 199

Que Que Strike, The, 416
Quest G.M., 48, 319, 495, 783

Railway Cartage, 813
Railway Development in Rhodesia, 71
Railway Profits as indirect Taxation, 964
Railway Rates and the Competitive Area, 213
Railway Rates, 204
Railway Sleeper Plantations, S. African, 201
Railway Taxation, 961
Rand Collieries, 783
Rand Water Supply, 960
Randfontein Central, 45
Randfontein Deep, 345
Reduction and Increase of Capital, Notice of, 155, 358, 584, 731, 767, 951, 965
Reef Tin in the Salisbury District, 15
Rietfontein Diggings, 292
Rietfontein (T.C.L.), Ltd., 81
Reports for English Shareholders, 801
Return of Metals in the shape of scrap, The, 351
Rezende G.M., 232
Rhodesia Exploration and Development Co., 451
Rhodesia and South African Syndicate, 117
Rhodesia Museum, The, 16
Rhodesian Coal, 452
Rhodesian Flotations Pending, 266
Rhodesian Tobacco, 961
Rhodesian Mining News, 539, 686, 715, 751, 799, 837, 873, 911, 947
Rietspruit Diamonds, 115
River Diggings Congress, 707
River Diggings, News from the, 438
Roberts Victor Diamonds, 45, 109
Romola Nigel G.M. Co., 48
Rooiberg Minerals Development Co., 45
Rose of Sharon, 85
Rose of Sharon and Shamrock, 232

Sabie Mines, 16, 148, 191, 192, 256, 266, 436, 863,
Safety Catch for Cages, A New, 811

"Sallies" Farms open to Prospectors, 330
Schabok, Ltd., 817
Schapdoon N. 486, Withdrawn from Prospecting, 931
Scottish Mashonaland, 379
Selati Railway, 79
Selukwe Columbia, 416
Selukwe G.M. Co., 232
Shaft Sinking by Electric Sinking Hoists, 311
Shaft Water as Motive Power, 622
Shamva Mines, Ltd., 651
Simmer and Jack East, 220, 414 570
S. African Institute of Electrical Engineers, 547
S. African Oil Co., 467, 740
S.A. Prospecting Syndicate, 119
S.A. Rubber, A, 813
S. African School of Mines and Technology, 588
South East Africa, 53
South Randfontein Deep, 567, 931
Spraying to Allay Dust, Dangers of, 710
Stanhope Mine, The, 108
Star of the Congo, 15
Steynsdorp Activity, 21
"Storm" No. 568. Proclaimed as a Public Diggings, 955
Strike of Mine Natives, 465
Sugar Industry, The Natal, 963
Sun Power Co., 811
Surprise G.M. Co., 192, 452
Swaziland Concessions for Sale, 684
Swaziland Corporation, 829
Swaziland in 1911, 904

Tanganyika Concessions, 16
Technical Education Conference, 295
Tin Scrap, The Utilization of, 744
Tin from Table Mountain, 367
Toronto Mine (Umtali), sold, 16
Town Hall (Johannesburg) Tender, 882
Townships Registry Transfers, 695
Trackless Trams for S. African Cities, 237
Trade Grievances, 239
Trade Returns, Monthly, 209
Transvaal Coal, 812
Transvaal General Lands Syndicate, 178
T.C.L. Farming, 127
Transvaal Prospecting Activity,
T.G.M. and Glynn's Power Supply, 959
Turbine Industry for S.A., 271
Tyne G.M. Co., 191

Underloaded Three Phase Induction Motors, 61
Union Railways and Harbours Estimates, 847
Union Stamp Duties, 695
United African Lands, 369
United Rhodesian G. Mines, 232

Van Ryn Deep, 604
Vellefontein Tin, 120
Vereeniging Estates, Ltd., 711
Virginia, The, 857

Water Softening Process, A, 446
Wattle Bark, 203
Wedburg Diggings, 488
Welgedacht, 724
Weltevreden, Claim Licences, 955
Wernher's Retirement, Sir Julius 711
Wesselton Diamonds, 785
Western Transvaal Diamond Diggings, 745
Weyhek Tins, Liquidator's Report, 951
White Labour, Inspector's Report, 387
Willoughby's Consolidated, 156
Witwatersrand, 842
Witwatersrand Deep, 175, 367, 739
Wolhuter G.M. Co., 228

Zaaiplaats Lease, 89
Zaaiplaats Tin, 220
Zinc, Uses of, 234
Zinc Dust for Rand Mines, 872
Zululand Industries, 201
Zululand Mining, 442, 932, 912

ILLUSTRATIONS AND MAPS.

Apex Colliery, View of, 797

Benoni, Sorting House and Reduction Works, 223
Bituminous Gas Engine, A, 521, 522
Butter's Filter Tanks at Brakpan Mines, 145

Cassiterite from Dawib, G.S.W.A. 221
Cinderella Consolidated Reduction Plant, 479
Cinderella Deep, Views of, 480
City and Suburban Main Shaft, 399
Compressed Air, Metering of, 49, 52
Compressor Station at New Modderfontein, The, 331
Consolidated Main Reef Mine, View of, 825

"Detroit" Combination Tool, 845

Ginsberg G.M., Views of, 435
Groenfontein Tin Mines, Views of, 365

Ingersoll "Butterfly" Drill at Work, 487
Ingersoll "Jack Hammer" in use, 179

Kleinfontein Central Power Station, Views of, 7, 8, 9
Knights Deep, Ltd., Views of, 789, 790

Large Rope, A, 547

Main Reef West, 825, 826
Meyer and Charlton Mine, 675
Miners' Phthisis Sanatorium, View of, 369
Modder "B" Views of, 73, 741, 743
Mooifontein and London Diamond Diggings, 565
Mount Aux Sources, Top of, 722

New Rand, Ltd., Drilling No. 15 Borehole, 485

Oxy-Acetylene Welding, 25

Piggs Peak Mine, 483
Princess Estate, Views of, 937, 939
Princess Estate, Roodepoort Central Deep Section, 5

Randfontein Central Power Station and Block A Shaft, 251
Robinson Deep G.M. Co., Views of, 517, 518
Rosherville Power Station, New Boiler Plant, 693

Tugela Gorge, near Tunnel, 721, 722
Turf Mines Shaft, 863

Uitspan Colliery, The, 893, 894

Village Deep Mine, Views of, 861, 863

Witbank Colliery, 894

GROUPS.

Manager of Apex Mines and I.C.S. Students, 797

MAPS AND PLANS.

Arbuckle Cone, The, 785
Belt Tightener, 339

Cannon Jockey, 841
Cone Systems, 333

Diagram of Olver's Correlations, Rand Geology, 561

Geological Sketch of Potgietersrust Tin Fields, 832
Geology of Witwatersrand, Plans of, 709

Horizontal Ignition Coil, 394

Key Plan of Farms London and Mooifontein, 563

Lower Witwatersrand Formation, 644, 672

Miner's Dial, New, Plan of, 349

Parallelism in Pipe Formation, Zaaipaats, Plan showing, 325
Plan of Humphrey Gas Pump, 459
Power Transmission by Ropes, Diagram, 809

Section of Faulting on the Rand according to J. S. Olver, 442

West Rand Geological Plans, 403, 404
West Rand Unified Claims, Plans of, 107

PORTRAITS.

Abu, Sir George, 639

Neumann, Sir Sigmund, 639

Phillips, Sir Lionel, 639

Stuart, Mr. John, 749

Warriner, Mr. Ruel C., 899

LEADING ARTICLES.

Accidents in Rand Mines, 737
Anniversary Number, Our Twenty First, 669

Chamber of Mines Industrial Policy, 140
Chamber of Mines View, The, 928
Cheap White Labour, 782
Coal, The Outlook for, 218
Coersion and the Dust Problem, 174
Competition for Labour, The 632

Diamonds and Tact, 889

East Rand Proprietary Mine Affairs, The, 103, 397, 515, 705
Eight Hours Day Question, The, 855
Encouragement, A Word of, 594

Fiscal Question, The, 928

Geological Survey, Work of the, 478
Goldfields Meetings, Two, 139
Goldfields Year, The, 361
Government and the Labour Question, 557

Hand vs. Machine Drilling, 140
Honours to the Industry, 631

Impracticable Suggestion, An, 632
Industrial, Trade and Taxation Problems, 3
Insecurity of Employment on the Mines, 323

Johannesburg Consolidated Investment Co., Ltd., 249

Labour Outlook, The, 362
Land Settlement and Immigration, 290
Legislators' Visit to the Rand, The, 173
Life of a Mine, The, 738

Machine Stoping on the Rand, 362
Main Reef Group, The, 4
Mine Accidents, 890
Mine Doctor as a Social Reformer, The, 71
Mineral Exports and Machinery Imports, 781
Mines Trial Committee, Work for the, 434
Mining Exhibition and Encouragement for the Inventor, The, 824
Mining Questions in the Union Parliament, 823

Native Labour in the Union, 104
New Mining Regulations, 398, 433
Outlook for Diamonds, 558
Outlook, Lord Harris on the, 434
Output for 1911, The, 670

Phthisis, 670
Phthisis, The Campaign against, 39, 594
Phthisis Developments, 706
Prosperous Companies, Three, 40

Rand Mine Manager's Views, 890
Rand Mines and Trade Unionism, 173
Rand Mining, New Spirit in, 706
Rand Progress Reports, 324
Rand Water Supply, 856
Rehabilitation of the E.R.P.M., The, 927

Some Aspects of Native Labour, 72
South Africa and the World's Gold Output, 856
Straight Talk to the Legislators, The, 217
Sunday Milling on the Rand, 477

Technical Education, 289
Technical Knowledge on the Bench, 516
Transvaal Gold Mining Estates, Position of the, 250

MONTHLY REPORTS.

Albu Group, 19,, 163, 234, 337, 491, 683, 835
Alluvial Fields, The, 566

Barnato Group, 19, 195, 337, 491, 683, 835
Benoni Consolidated, 857
Blaauwbosch Diamonds, 23, 150, 481, 658, 842
Boshof Diamonds, 82
Brakpan Mines, 20, 204, 330, 499, 680, 840
Bucks Reef, 85, 232, 415, 761, 912
Bwana M'Kubwa, 17

City and Suburban, 144, 330, 499, 684
Claremont, 875
Companhia de Mocambique, 148, 436, 659
Consolidated Gold Fields Group, 20, 195, 338, 491, 682, 836

East Rand Proprietary Mines, 338, 482, 674, 827
Eland Diamonds, 23, 327, 481

Farra Anglo-French Group, 58, 195
Free State Diamonds, 909

Giant Mines, 617
Glynns Lydenburg, 42, 178, 328, 495, 659, 842
Goerz Group, 195, 337, 492, 684, 836

Hay Gold Mining Co., 617
Holwater Diamonds, 618

Jagersfontein Diamonds, 41
Jumpers G.M. Co., 482, 684
Jumpers Treasury, 840

Koffyfontein Diamonds, 184, 419, 488, 678
Kolmanskop Diamonds, 23, 58, 150, 177, 330, 498, 690, 842
Kroonstad Diamonds, 177, 501, 690

Lonely Reef G.M. Co., 15, 85, 416

Messina Copper, 23, 165, 186, 372, 740, 864

Neumann Group, 19, 194, 338, 492, 683, 835
New Found-out Mines, 614
Nigel G.M. Co., 679, 829
New Heriot, 20, 175, 492, 684, 840
New Kleinfontein, 20, 328, 338, 491, 684, 829
New Primrose, 840
New Vaal River Diamonds, 41, 165, 332, 419, 501, 690
New West Bonanza, 53
Nigel G.M. Co., 10, 175, 332

Piggs Peak Development Co., 48, 180, 372, 520, 863

Rand Collieries, 788
Rand Mines Group, 19, 194, 337, 491, 683, 835
Rex Gold Mine, 144, 295, 442, 832
Rhodesia Chamber of Mines, 191, 303, 452, 651
River Diggings, 864, 906
Roberts Victor Diamonds, 498, 645, 840
Romola Nigel G.M. Co., 117
Roodepoort United, 788
Rooiberg Minerals Development Co., 178, 331, 490, 677
Rouge Mine, 612

Selukwe Columbia, 33
Sheba, G.M. Co., 28, 178, 330, 495
Sheba & Rosetta, 674, 842

Transvaal Chamber of Mines, 222, 262, 366, 568, 708
Transvaal G.M. Estates, 53, 182, 338, 495, 684, 832

Worcester G.M. Co., 10, 186, 829, 842

Zaaiplaats Tin Mining Co., 14. 330, 485, 638, 829

QUARTERLY REPORTS.

Apex Mines, 334
Aurora West, 798

Bantjes Consolidated Mines, 420, 868
Barnato Group, 306
Benoni Consolidated, 338, 930, 967
Brakpan Mines, 216, 828
Bucks Reef, 612

Cinderella Consolidated, 791
City Deep, 910
City and Suburban, 228, 796
Claremont Mines, Rhodesia, 379
Consolidated Langlaagte, 840
Consolidated Main Reef, 429
Crown Mines, Ltd., 402, 898

Durban Roodepoort Deep, 429, 967

East Rand Proprietary, 420, 830
Eldorado Banket, 381, 875

Ferreira Deep, 372, 910
Ferreira G.M. Co., 967

Geduld Proprietary, 369
Geldenhuis Deep, 420, 967
Ginsberg, 833
Glencairn, 791
Goerz Group, 866
Groenfontein Tin Mine, 740

Jumbo, G.M. Co., 55
Jumpers G.M. Co., 400, 931
Jupiter G.M. Co., 345, 860

Knight Central, 384
Knights Deep, 544

Lancaster West, 339
Lonely Reef G.M. Co., 156
Luipaardsvlei Estate, 189, 634

Main Reef West, 406
May Consolidated, 334
Messina Copper, 150
Meyer & Charlton, 798
Modder Deep Levels, 175, 724
Modderfontein "B" 327, 946

New Goch, 788
New Heriot, 375, 807
New Kleinfontein, 345
New Modderfontein, 929
New Rietfontein, 830, 936

Princess Estate G.M. Co., 346

Rand Klip, 219, 833
Rand Mines Subsidiaries, 456
Randfontein Deep, 798
Rhodesia Chamber of Mines, 343
Robinson G.M. Co., 956
Robinson Deep, 420, 870
Rooiberg Minerals, 224, 830, 863
Rose Deep, 370, 953

Salisbury G.M. Co., 328
Shamva Mines, 154
Simmer Deep, 420, 860
Simmer East, 28, 59, 596
Simmer & Jack, 420, 929
S. Randfontein Deep, 219, 707
Springs Mines, 460, 828

Van Ryn Deep, 842
Van Ryn Gold Mines, 798
Village Deep, 870
Village Main Reef, 499
Voorspoed Diamonds, 150

West Rand Consolidated, 788
Witwatersrand Deep, 375, 910
Wolhuter G.M. Co., 189, 604

SPECIAL ARTICLES.

Abandonment of Cyferfontein, 437
Abercorn Banket, 15
Accidents in Transvaal Mines, 410, 748, 796
Air Flow Measuring: Ferreira Deep Master Meter, 755
Alluvial Diggings, Record Output from, 404
Amalgamation, A coming Central Rand, 929
Anniversary Number Competitions, Our, 679, 794, 956
Apex Colliery, Equipment of the, 797
Arbuckle Cone, The, 785
Are Veins Richer in Depth ? 185

Barberton Mines, Activity in, 648
Bechuanaland and Swaziland Annual Reports, 600
Benoni Problem, The, 857
"Big Mill" Policy on the Rand, The, 519
Big Mills and Working Costs, 598
Bituminous Gas Engine in S.A., The, 521
Bloemhof Diamond Diggings, 563
Bwana M'Kubwa Copper, The Outlook for, 142

"Cannon" Jockey, Advantages of the New, 841
Cascade Motors for Mine Haulage, 689
Chamber of Mines Activities, 82
Chemical Research in S.Africa, 14
City and Suburban, Position of the, 932
Coal Mines of the Transvaal—The Witbank Colliery, 893
Coastal Diamond Deposits of German S.W. Africa, The, 56
Coking Tests of Transvaal Coals, 181. 228
Congo Mineral Prospects in 1911, 828
Consolidated Langlaagte New Plant, The, 295
Contorted Bed, Problem of the, 933
Crown Mines Activities reflected in Figures, 253
Crown Mines, Ltd., Position of the, 534

Deepest Workings of the Central Rand, The, 897
Development of the S. African Coal Trade Export, 11
Development, The Matter of, 858
Devil's Kantoor, Alluvial, 486
Diamond Cutting and Polishing Industry, 344
Diamond Market, The State of the, 744
Diaphragm Cone and Sand Filter Table, The, 740
Disposal of Bewaar Plaatsen and Water Rights, 408
Dividends, in 1911, 595, 596, 641
Dividend Payers in December, 708
Dividends, Rhodesian, 800
Drilling in Stopes at Jupiter Mine, New System of, 487

East Rand Proprietary Mine Embroglio, The, 529, 531, 599, 605
East Rand Proprietary Mines Meeting, The, 940
East Rand Proprietary Mine Reserve Fund, An, 42
Economics of the Nissen Stamp, The, 572
Eckstein Mines, The Year 1911, with the, 860
Electric Power Supply Problem, The, 364
Electrolytic Assay of Gold Solutions, 79
Explosives in South Africa, Manufacture of, 183

Far East Rand Expansion, 223
Fault Problems, 106
Further West Rand, The, 107, 898

Geological Problem of the West Rand, The, 367, 403
Geological Research on the Rand, 788
Geological Survey of S. Africa, 489, 540, 571
Geology of the W. W. Rand, 643, 671, 709
Gold Dredging in Knysna, 6
Gold Output for December and 1911, 681
"Goldfields" interests in Rhodesia, 377, 951
Government Aid for the New Steel Works, 896
Government Mining Engineer on Mine Accidents, 907
Grades, Costs and Profits 260, 500, 618, 784, 806, 954

Group Mines and the Market in 1911, 633
Group Results in 1911 and 1910, 936

Hartley District, Mining in the, 912
Health Regulations in Rhodesia, New, 753
Henderson's Transvaal Estates, 602
High Duty Gravity Stamp Mills, 307, 457
Holiday Place for Jaded Randites, A, 721
"Humphrey" Gas Pump, The, 459

Inaccurate Estimates in Rand Mining, 252

"Jack Hammer" Drill, Advantages of, 179
Jumbo, Prospects of the, 299

Kleinfontein Central Power Station, The, 7
Kleinfontein Power Station, The Switchboard, 44
Klerksdorp Mining Activity, 677

Labour Crisis in Rhodesia, The, 151
Labour and other Questions, Official Review of, 941
Latest News from Charterland, 413, 449, 497, 573, 611, 651
Lomah Stoessel Banket, Prospects of the, 301
London Diamonds, 864
Luipaardsvlei Estate, Results from, 601

Machine Drilling in Stopes, 784
Machine Drills vs. Hand Labour, 254
Messina Copper: Production and Prospects, 647
Metallurgical Progress, 291
Metering of Compressed Air, The, 49
Mine Accidents on the Rand, 562 944
Mine Dust Problem, The, 43
Mineral Production of the Union, 402
Mineral Prospects in East Central Africa, 368
Mineral Resources of Central Africa, 146, 184
Miners' Baths, 656
Miners Phthisis in Cornwall, 786
Miners Phthisis Sanatorium, The, 369, 419
Mines of the Witwatersrand—
  Cinderella Consolidated, 479
  City & Suburban, 399
  Ginsberg G.M. Co., 435
  Knights Deep, 789
  Luipaardsvlei Estate and G.M. Co., 637
  Main Reef Group, 825
  Meyer & Charlton, 675
  Modderfontein "B", 741
  Princess Estate & G.M. Co., 937
  Robinson Deep G.M., 617
  Village Deep, 861
Mining Exhibition, The, 829
Mining in Capo Colony, 466, 633
Mining in Manicaland, 711
Mining in the outside Districts, 265, 407, 444
M.F. (Rhodesia) Proprietary, Ltd. 415
Modderfontein "B" Progress, 73
Mooifontein Alluvial Diggings, 488, 524, 712
Moro Light on the E.R.P.M. Position, 908
Mortality on the Mines, 332
Mozambique Co., Position and Prospects of the, 329

Natal Mining Development, 569, 603
Native Drilling Efficiency, 523
Native Labour Shortage and the Mining Industry, 750
New Company, Patent, Insolvency and Trade Mark Registrations, 257
New Flotation: Pickstone Claims, 874

Oceana Consolidated, Outlook for the, 291
Oil Found in Madagascar, 258
Organic Origin of Petroleum, The, 296
Output Figures for Six Months, 293
Output, The January Constitutes a Record, 876
Outstanding Rand Features and Figures in 1911, 784
Oxy.-Acetylene Cutting and Welding Process, 375

Pickstone Claims, 874
Piggs Peak, Recent Progress at, 483
Pilgrims' Rest Mining and Railway Communication, 678
Plight of the S. African Coal Industry, 830
Position of the Benoni, 707
Position of the East Rand Mining Estates, 490
Position of the Main Reef West, 12
Position of the New Boksburg Gold Mines, 80
Practical Application of the Specific Gravity or Moisture Flask, 408
Prevention of Dust in Mines, The, 543
Princess Estate Prospects, 638
Problem of the Potgietersrust Tin Fields, 831
Progress at the Globe & Phœnix, 231
Progress at the Princess Estate, 5
Progress at the Rand Klip, Ltd., 80
Progress of Natal, 268
Prospector, Financial Encouragement for the, 746
Prospecting on the North Rand Line, 739
Protection in Australia and South Africa, 445

Quest of a Suitable South African Coke, The, 932

Rand Bankets, Origin of, 176
Rand and California, The, 597
Rand Economics in 1911, 567
Rand Geology, Another new Theory of, 178
Rand Labour and Health Questions, 909
Rand Mine Managers in Conference, 899
Rand Mining, The Outlook for, 935
Rand Mines Power Supply, 74
Rand Mining as an Investment, 859
Rand Working Costs and Deep Level Values, 542
Randfontein Central, 251, 787, 930
Reduction Plant Absorption, 77
Review of Mining in Manicaland, 47
Rhodesia Broken Hill, 753
Rhodesia Chamber of Mines, 343
Rhodesia Exploration Scheme, 752
Rhodesian Health Regulations, New, 451
Rhodesian Labour Supply, 17
Rhodesian Mining Regulations, 117
Rhodesian Native Labour Bureau, 576
Rhodesian Ore Reserves, 653
River Diggings, Latest from the, 785
Romola Nigel in Rhodesia, The, 231
Rooiberg Tins in 1911, 674

Sand Filling in Deep Level Mines, 219
Shaw Hammer Drill, Possibilities of the, 110

Shortcomings of the Full Mill Policy, 891
Simmer and Jack Proprietary Mines, The, 143
Some featuresof the New Mining Regulations, 409
South African Coal Traffic and Coal Rates, 86
South African Fiscal Problem, The, 263
South Africa's Mineral Output, 756
State Aid for S. African Industries, 505, 585
State aid to Mining in Western Australia, 297

Tailings, The Treatment of, 526.
Tanganyika Copper, The Outlook for, 649
Tanganyika Concessions, Ore Reserves, 717
Tanganyika Smelting Operations, 412
Tin on Appin Gendam, 328
Tin in the Karibib District, German S.W. Africa, 221
Tin in the Zeerust District, 226
Tin Fielda Revisited, The, 325, 365, 405
Tin Fielda, Latest from the, 75
Tin Flotations, 41
Tin Industry, The, 783
Tin in the Pretoria District, 482
Tin Mining Developments, 141
Tin Mining in Northern Nigeria, 261,
T.C.L. Activity, Recent, 902
Transvaal Cement Manufacture, Competiton in, 934
Transvaal Chamber of Mines Monthly Report, 222
Transvaal Steel Making Scheme, Progress of the, 438
Transvaal Tin Ore, 175
Trade and Industries Commission's Report, 943
Trent Agitator, The, 636
Tube Milling Economics, 634
Transvaal Zinc, Prospects of the, 105
Tyne Mine, Prospects of the, 299

Union Commerce and Industries, 205
Union Mineral Output in January 942
Union Railways and Harbours, 87
Unsuccessful Rand, Rhodesian Venture, An, 265

Vacuum Filtrations on the Rand, 145, 635
Values in Depth, Rand, 177
Van Ryn Deep Construction, 108
Van Ryn Mines Position, The, 646
Venterskroon Gold Fields, The, 786

Welgedacht, The Outlook for, 109
Wire Ropes as applied to Mining, 335
Witpoortje Discoveries, 439

Year with the Consolidated Goldfielda Group, 371
Year with the Consolidated Main Reef, 13
Year with the De Beers, 525
Year with the Ferreira Deep, 527
Year with the Glynn's Lydenburg, 417
Year with the Johannesburg Consolidated, 220
Year with the Jumpers, 225
Year with the Knights Deep, 292
Year with the Mayo (Rhodesia) Development Co., 341
Year with the Middleburg Steam Coal and Coke Co., 370
Year with the New Heriot, 931
Year with the New Modderfontein, 45
Year withthe Nourse Mines, 187
Year with the Premier Diamonds, 791
Year with the Rooiberg Mine, 113
Year with the Sub-Nigel, 144
Year with the Swaziland Tin, 46
Year with the Van Ryn Mine, 601
Year with the Vereeniging Estates, 443
Year with the Witbank Colliery, 294
Year with the Wolhuter G.M., 747
Year in Rhodesia, The, 613, 654, 716, 801
Yields, Costs and Profits, 260 500, 618, 784, 806, 954

Zaaiplaats Plant, New, 327
Zaaiplaats and Rooiberg Prospects, 892
Zaaiplaats Tin: Report by Mr. C. F. Tbomas, 109

STATISTICS,

Accidents, 410, 746, 756, 907
Alluvial Diggings, 404

Banking, S.A. General, 162
Banking, Transvaal, 663
Barberton District Mining, 180
British Trade with S. Africa, 353, 467, 963
Building, 313, 353, 729, 847, 917

Cable Service, 239
Coal, S. African, 697
Coke, 181, 228
Costs Grades and Profits, Rand, 120
Crown Mines, 253
Customs—Durban, 313, 363, 663
Customs, Union, 29, 353

Diamond Taxation, 89
Dividends, 452, 559, 595, 596, 641
Dividends, Rhodesian, 800

Eckstein Mines, 860
Explosivea, 155

Finance, Union, 313, 812, 966

Goods and Mineral Traffic, 204
Groenfontein Tin Mines, 86
Group Profits, 59

Imports and Exports, Union, 29

Johannesburg Municipal Finances, 239

Labour, European, 127, 756, 765
Labour, Native, 41, 82, 222, 366, 704, 708, 756, 858
Labour, Native, Rhodesian, 17, 303, 576, 613
Land Banks, 963
Life Insurance, 584

Mine Purchases, 129, 164
Modderfontein "B" 486
Mortality Mine, 122, 303, 332
Mozambique Trade, 695
Municipal Markets, 767

Outputs, Coal, Natal, 142, 298, 465, 569, 691, 870
Outputs, Coal, S. African, 756
Output, Coal, World's, 731, 948
Output, Copper, Transvaal, 756
Outputs, Diamonds, Union, 952
Output, Gold, Rhodesian, 415
Output, Gold, Transvaal, Aug., 19; 57; Sept., 193; Oct., 383; Nov., 491, 535; Dec., 681; Jan., 876, 942
Output, Gold, S. African, 756
Output, Gold, Group Results in 1910-1911, 936
Output, Manicaland, Mineral, 316
Output, Natal, Mineral, 569
Output, Rhodesian Mineral, 117, 153, 265, 304, 453, 615 801, 803, 949
Output, South African Mineral, 609, 756
Output, Transvaal Mineral, 116, 262

Premier Diamonds (Transvaal), 902

Railway (Union), Finances, 623
Railways, S. African General, 127, 731, 847
Railways and Harbours, 883
Railway Stores, 203
Rand Economics in 1911, 567
Rhodesian Ore Reserves, 653
River Diggings, 260

Scottish Mashonaland, 379
Shipping, 695
Stamp Mills, 307
Standard Bank, 127

Trade of the Ports, 239

Union Postal Department, 201
Union Trade, 504

The 21st Anniversary Number

OF THE

SOUTH African Mining Journal

Will be issued in JUNE next.

It will be a unique work of reference. It will be a complete and authoritative handbook to the Mines of the Union of South Africa, including those of Rhodesia and of other mining centres outside the Union. It will be a guide to the Industries of the country, its Commerce, Harbours, Railways, Financial Institutions, Agriculture, etc., etc. It will be profusely illustrated, printed on art paper throughout, and will contain about 350 pages, with a : : : : specially designed cover in three colours : : : :

The Best Advertising medium South of the Equator.

Apply for Advertisement Rates to:—

THE MANAGER,
"South African Mining Journal,"
P.O. Boxes 963 and 418,
119 to 126, Exploration Building,
JOHANNESBURG.

THE SOUTH AFRICAN
Mining Journal,
WITH WHICH IS INCORPORATED
The South African Mines, Commerce and Industries.
ESTABLISHED 1891.

Vol. IX., Part II.] January 6, 1912. [No. 461.

HEAD OFFICE: 119-126 Exploration Building (3rd Floor).
Telephone **913.** P.O. Boxes **963** and **418.**
Cable and Telegraphic Address: **" MINING JOURNAL."**

Manager for Great Britain: G. Leighton Hare, 119-120 London Wall, London, E.C., to whom all communications must be addressed.

German Agents: Dean-Mayer Co., Linkstrasse 39, Berlin, W., 9.; Rudolf Mosse, Jerusalemer Strasse, 46-49 Berlin, S.W. 19; H. C. Wolff, Residenzplatz, M. 85, Kempten, Bavaria.

American Agents: National Advertising Co., 4th Floor, Quincy Buildings, Denver, Col.

Copies of this journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all Newsagents and Railway Bookstalls throughout South Africa, and at the London office as above.

NOTICE.—The postage of this issue of the *S.A. Mining Journal* is: South Africa, 1d. All other parts, 2d.

CONTENTS.

PAGE
Notes and News ... 629
Topics of the Week:
  Honours to the Industry ... 631
  The Competition for Labour ... 632
  An Impracticable Suggestion ... 632
Group Mines and the Market in 1911 ... 633
Tube Milling Economics ... 634
Vacuum Filtration on the Rand ... 635
The Trent Agitator ... 636
Mines of the Witwatersrand:
  V.—Luipaardsvlei Estate and G.M. Co. ... 637
Princess Estate Prospects ... 638
New Honours for Rand Mining Magnates ... 639
Prospects of the Anglo-German Tins, Ltd. ... 640
Dividends for 1911 ... 641
Geology of the Witwatersrand ... 643
The Van Ryn Mines Position ... 646
Messina Copper Production and Prospects ... 647
Activity on Barberton Mines ... 648
The Outlook for Tanganyika Copper ... 649
Correspondence and Discussion:
  Anglo-German Tins, Ltd. ... 650
  The Hardinge Mill ... 650
  The Farm " London " ... 650
Rhodesian Section:
  Latest Mining News ... 651
  Rhodesian Ore Reserves ... 653
  The Year in Rhodesia ... 654
Miners' Baths ... 656
Tailings Wheels and Pumps ... 657
The Week in the Sharemarket ... 659
Engineering Notes and News ... 661
Commerce and Industries ... 663
Automobile Notes ... 665
Index to Advertisers.

Notes and News.

The Diamond Outlook. According to latest reports, taking into consideration the period of the year, the diamond market continues very firm, and the big demand for the gems still being experienced is causing a considerable amount of surprise. In the ordinary way, that is, judging by what has taken place in previous years, the market remains in a quiescent condition virtually from mid-November until well into January. This year, however, the demand continues unabated, and we learn, on unquestionable authority, that substantial advance orders have been placed for execution early this month.

* * * *

Power Supply. With regard to electrical power supply, Mr. Leopold Albu, at the Van Ryn meeting, said the Victoria Falls Power Company have had calls for supply greatly in excess of what they originally anticipated, but they have never attempted to curtail the supply to present consumers on this account. They obviously could not do so, the only effect of this unlooked-for demand being the urgent necessity on their part to proceed as rapidly as possible with the extension of their generating stations. " In fact," he said, "it is a proof of the popularity and economy of purchased power, and I have in my possession figures which prove that on every single one of the mines under the management of my corporation purchasing electrical energy in bulk from the supply company, the power costs have decreased in varying degrees ranging from 6d. to 9d. per ton of ore crushed."

* * * *

Koffyfontein Mines. A controlling interest in the Koffyfontein Mines, Ltd., has been acquired by the great De Beers Company, and three directors have been appointed to represent the Kimberley Company on the board. For the year to June last the Koffyfontein made a profit of £50,266, after writing off £37,245 for maintenance and depreciation. Owing to litigation past profits were not distributed, so that on account of 1910 a dividend of 15 per cent. was distributed on July 18 last, and a dividend of 10 per cent. for 1911 is recommended, leaving £27,331 to go forward. The company has suffered from lack of labour, and although the washing capacity of the plant is 3,000,000 loads per annum, the output will be restricted to 2,000,000 loads until the blue ground on the floor amounts to 2,000,000 loads. Dividends for the current year are not likely to exceed 15 per cent., and probably only 10 per cent. will be forthcoming. The number of carats recovered during the twelve months amounts to 115,834, being an increase over the previous year's production of 25,006 carats. The number of loads washed amounted to 2,128,554, being an increase of 271,403 loads. The average yield per 100 loads works out at 5·44 carats as compared with 4·89 carats last year. The number of loads of blue ground on the floors at June 30 last was 1,277,833, showing an increase for the year of 270,120 loads. The new gear, which now comprises five groups of washing pans, has continued to give every satisfaction. These are the salient features of the best report the company has issued.

* * * *

Rand Metallurgy in 1911. The year 1911 has been distinguished rather by the extension and improvement of metallurgical processes than by the introduction of anything of importance that can be considered new. During the previous year we had to record the coming of the Butters' Filter and the Merrill Zinc Dust Process, and as will be seen from another article in this issue the success of the former has been distinct and gratifying. It has been put to the test at several mines, and the number of actual and probable installations is on the increase. We have it on reliable authority that

Dr. Caldecott, after a careful investigation into its performances at various mines, has recommended its erection at the East Rand Proprietary Mines. We have not learnt, however, if his recommendation will be acted upon. The merits of the Caldecott sand filter have been recognised by mines outside those of the Gold Fields group, and it has come into more extensive use. The substitution of stationary amalgamating plates instead of shaking plates below tube mills, and the limitation of their area was a feature of last year's metallurgical progress. The trial of various crushing and grinding appliances new to the Rand was taken in hand, and although no definite results have followed in the way of the introduction of new types of machine for these purposes it is interesting to note that there does not exist a hide-bound conservatism with regard to their possible employment at a later date, should the innovation be warranted by experimental results. In this connection the satisfactory test of the Nissen stamp may be referred to. The Way-Arbuckle process has, of course, attracted no small amount of attention during the past year, and although its installation at Benoni warrants the event being included among those of 1911, the actual commencement of its career on a normal working scale has yet to be recorded. So far it has given excellent results, but there are various adjustments to be made before it can be said to have "found itself" as a steady going unit of the reduction plant.

* * * *

A Leading Rand Mine.

Mr. John Seear, in the course of some remarks he made at the Van Ryn meeting, said: "I only wish there were more mines of the same calibre as Van Ryn." What the calibre of Van Ryn is was clearly shown by the speeches delivered by Mr. F. A. Gillam, the chairman, and by Mr. Leopold Albu, one of the directors. Holders have received since the Boer war £1,200,000, a record, said Mr. Gillam, "of which any company might be proud." It may be remembered that the plant was destroyed during that struggle. This plant has now been renewed, at a cost of £481,740. In the same interval, £342,991 has been spent on underground developments out of profits, and the huge ore reserves, amounting to 1,655,910 tons, of an average value of 6·31 dwts., stand in the books to-day at nothing. Gold has been produced since the war to the value of £3,755,063, and there has been written off equipment £372,360. The mine is in a high degree of prosperity, and Mr. Leopold Albu says there is no reason why this should not be maintained and even improved. The equipment is now complete. It consists of 160 stamps of a heavier pattern than those formerly used. There is also an up-to-date cyanide and slimes plant capable of treating from 38,000 to 40,000 tons per month. The bulk of this expenditure has been charged against profits. All capital outlay has been finished with the exception of that which No. 2 shaft will entail during the current year, say, about £25,000. The figures given in the directors' report were dealt with a week ago; suffice it to say that the net profit was £274,084; that 45 per cent. has been paid to the shareholders, and that for the current year a dividend of 22½ per cent. was announced at the meeting. Elsewhere we print in full the annual report of the managing director, Sir George Albu, Bart.

* * * *

Rhodesian Amalgamation.

A circular letter was issued recently by the Rhodesia Exploration and Development Company, Limited, in which it is stated that the proposals mentioned in the progress circular of December 6 have now assumed a definite form. The directors relate that they were approached by the Consolidated Gold Fields of South Africa, Limited, with a scheme for the amalgamation of the company with the Gold Fields Rhodesian Development Company, Limited, and after considerable negotiation the Gold Fields Rhodesian Development Company, Limited, have made an offer, which, in the opinion of the board, should be carefully considered by the shareholders. For this purpose it is proposed to call a meeting of the shareholders for the second week in January, due notice of which will be given. As it will be impossible to receive the full accounts before the end of March, it is intended to issue an approximate balance-sheet to the end of the year, so that shareholders may be informed of the position of the company. Under the proposed scheme the existing shareholders of the company would receive shares in the proportion of nine Gold Fields Rhodesian Development Company's shares for each four Rhodesia Exploration and Development Company's shares; the proposal is to register a new company to acquire the assets of the two existing companies on the basis above-mentioned; and Lord Harris, the chairman of the Consolidated Gold Fields of South Africa, Limited, will be chairman of the new company. Further details were published this week of the amalgamation of the Rhodesia Exploration and Development Company and the Gold Fields Rhodesian Development Company. The Exploration Company's profit for the year was £224,000, but the company will not pay a final dividend before the amalgamation takes place. The new board will consist of seven directors of the Gold Fields and four of the old Exploration Company. The nominal capital will be £3,000,000, of which £490,000 will be held in reserve. The old Exploration Company will receive 1,740,128 shares in exchange for 1,546,780. Gold Fields shareholders will receive one share for each two existing shares.

* * * *

Orange Diamonds.

The directors announce that the response of the shareholders to the invitation for subscriptions to the debenture issue was of such a meagre description that the issue has been withdrawn. The property of the company consists of 664 acres of freehold land on the farm Kaalvallei, comprising the mine and mining area, and 2,389 acres of freehold land on the farm Dirksburg adjoining the mining area. These farms are now in course of being prospected by an experienced diamond prospector, and during the year the work done consisted of the sinking of 1,219 prospecting shafts totalling 10,040 feet sunk. No new pipes have been discovered, although fissures carrying diamondiferous soil were struck in several places. The cash in hand and sundry debtors at the end of the financial year amount to £5,065 16s. 7d. At the annual meeting last week Mr. N. J. Scholtz said: "It is greatly to be regretted that the efforts of the directors to raise the funds necessary to place the company on a satisfactory footing have not met with that support from shareholders which the scheme deserved, especially after Sir Joseph Robinson voluntarily came forward to subscribe 50 per cent. of the money required for the purpose. Under the circumstances nothing further can be done at present towards carrying on the work projected by the directors."

* * * *

Hay Gold Mining.

The report presented at the recent meeting of the Hay Gold Mining Company is satisfactory so far as finances are concerned. From the treatment during the six months ended 30th June of the tailings taken over with the property, the Company derived a profit of £10,500, and a further £2,600 was received in the shape of interest and dividends. After setting aside £2,750 to bullion reserve, a net balance of slightly under £8,000 remained. At the date of the balance sheet the Company had on hand cash and gold to the amount of slightly under £8,000; debtors and loans stood for £43,000, and investments at £7,500, the market value of the latter being £5,600. There were creditors for £11,700. The disappointing feature is the ore reserve position, the quantity available at 30th June being placed at no more than 30,600 tons, averaging 10·13 dwts., and of this 2,260 tons are "probable ore." The consulting engineer explains that the greater portion of the development work done during the period merely proved as actual what was previously estimated as probable. Regular returns from the 10-stamp mill should now be secured.

Enterprise.

The accounts of the Enterprise Gold Mining and Estates Company for the past two years ended 30th June reflect very clearly the altered conditions. In 1909-10 the Company made a net profit of £62,000, whereof nearly £57,000 represented the net outcome of share realisations. Last year the latter item figured for only £600, the total income being £15,400 and the net profit about £11,000, consequently the interim dividend of 2s. per share paid in March last represented nearly double the actual net earnings of the period. Naturally, no balance distribution is announced, for although the balance sheet shows a profit and loss credit of £24,400, the cash assets exceeded the liabilities by about £4,000 only. Shares in the Giant, New Found Out, and other Rhodesian companies figure at £145,400, the value of the quoted shares being £269,000; a year previously the item stood at £114,000, and the market value at £335,000. An interest has been acquired in the Golden Kopje claims now being opened up by the Consolidated Gold Fields, and also in the Venice properties in course of development by the London and Rhodesian Mining and Land Company.

* * * *

Balkis, Ltd.

The assets of the Balkis Company comprise:—(a) About 300,000 acres of freehold land in the Transvaal, mainly in the Waterberg and Zoutpansberg districts, together with the mineral rights thereon, subject to the mining laws of the Transvaal, surveyed and beaconed off. (b) The freehold farms, Elandsfontein and Riviers Draai, near Heidelberg (Transvaal), acquired from the New Oceana (Transvaal) Coal Co., having an area of 3,094 acres. (c) The Bangwaketsi and Kanyé concessions, which give to the company the right to select areas extending in the aggregate to 800 square miles for mining purposes in Bechuanaland Protectorate. The area over which the right of selection applies is about 9,300 square miles. (d) A large interest in Nyasa Consolidated, Ltd., a company formed for the purpose of consolidating various interests in the Companhia da Nyasa, which holds a charter to administer an extensive territory in Portuguese Nyasaland; and (e) sundry investments and interests. During the year ending August 31 the directors thought it prudent to utilise a moderate amount of the funds in hand in acquiring interests in Rhodesian and other undertakings which presented attractive features. Prospecting agreements have been renewed in respect of two of the Transvaal farms and the Bangwaketsi and Kanyé concessions, but no discoveries of commercial values have as yet been reported. New United Reefs (Sheba), in which Balkis, Ltd., holds a large interest, during the twelve months ending September 30 last treated 9,015 tons of ore for a yield of 3,213 ozs. of gold, valued at £12,307. The gold won was sufficient to cover all costs of mining, milling and development during the period.

* * * *

Health on the Cold Coast.

The following figures, which are of considerable interest, certainly point to the fact that health conditions have been materially bettered on the Gold Coast of recent years. During the twelve months ended June 30, 1911, the percentage of the possible working time lost by the white employees of the Abosso Gold Mining Company was 1·848 per cent. from all causes, accidents included. This figure is made up of 1·106 per cent. from purely climatic causes; ·601 per cent. from other illness, mainly non-climatic; and ·141 per cent. from time lost consequent on accidents. Similarly, at the mine of the Taquah Mining and Exploration Company, the time lost from all causes was 2·812 per cent., including 1·312 per cent. for malaria, ·963 per cent. from other sickness, and ·537 per cent. from other accidents. Low as these figures are, they are not exceptional, for in the previous year the total time lost from all causes was, at Abosso 1·655 per cent., and at Taquah 2·129 per cent.

TOPICS OF THE WEEK.

HONOURS TO THE INDUSTRY.

Our sincerest congratulations to the three leaders of the mining industry whom the King has delighted to honour this New Year. To Sir Lionel Phillips are due our first and heartiest good wishes because of the many-sided part he has played in the public affairs of South Africa. His greatest service to the mining industry has lain in the fact that he has given himself, with signal success, to the task of welding the fortunes of the country and industry together and of securing that unity of purpose and effort that are essential to all progress. What Sir Lionel Phillips has done for the mining industry, no reader of our pages needs to be told. His record and his history are the record and history of the great interests he controls here, and are practically indissoluble from the record and history of the Rand. The bewildering variety of his other activities, his efforts to promote Art, to encourage education, to advance agriculture throughout the country, it is hardly within our province to appreciate. The Annual Show of the Witwatersrand Agricultural Society is the most familiar evidence of what he has done for agriculture, and is at once the fruit and blossom of the time, money and enthusiasm he has devoted to that cause. His political labours go even further back, to the dawn of constitutional freedom in the Transvaal, and form part and parcel of the movement that has culminated in the Union to-day. On his love for and encouragement of sport, his private benefactions and personal popularity, we need not dwell, because the daily papers have already paid tribute to them. By honouring him the King has not only honoured the man and his work, but has also given tangible recognition of the talent and honesty that have come to be characteristic of the great firm of which he is the leader and the mainstay. The honour conferred on Sir George Albu is even to a greater extent a tribute to business ability and integrity, because of the self-imposed limitations observed by the popular head of the General Mining and Finance Corporation. Politics and public affairs, except when most intimately connected with or impinging upon the industry, he has assiduously avoided, with the result that he has many friends in every political camp and enemies in none. Not until the history of the Rand comes to be written by the impartial and fully-informed historian shall we know how much of the present pre-eminence of the industry is due to indomitable energy and undaunted optimism of Sir George Albu and his colleagues. To his personal efforts is due the introduction of much of the foreign capital that has gone to the making of the Rand, and to his aid and high confidence the industry must continue to look for help over the rough places and the discouraging passages which it is bound to encounter in the days to come. Although a less familiar figure on the Rand, Sir Sigmund Neumann is, no doubt, so largely bound up with the beginnings of the place, its meteoric growth and the part it plays in the eyes of investors, that the honour done him comes home very closely to us all. It is not for us to say how far the head of the Neumann Group is wise in making London his headquarters. Had he been less capably represented on this side, or had his choice been less justified by results, we might have desired his more frequent visits. As it is, we believe the services he now renders as an ambassador and representative of the Rand in the centre of the world's finance, outweigh in value any he might render here, and the high honour paid him by the King is, on every ground, amply deserved. Indeed, we must not be accused of straining a point if we describe the New Year Honours as a fine tribute, not alone to the great personal merits of the recipients, but, likewise, to the world-importance of the great interests they control and the Imperial significance of the gold mining industry of the Rand. And because of the very stress of present conditions, involving depressed markets and increased managerial anxieties, we are disposed to be grateful alike to the King and his Ministers who have bestowed such signal and timely marks of Royal favour and to those who have by their personal efforts and attributes merited them.

THE COMPETITION FOR LABOUR.

The lamentable competition between the mines of the Rand for native labour, resulting in increased wages and increased recruiting costs, has provoked comment from several quarters of late. Thus we find the Chairman of the Johannesburg Stock Exchange advocating in all seriousness that the mines on the margin of payability should be closed down temporarily to allow of the other mines increasing their labour supplies. Sir George Albu, who has never shrunk from stating the matter in the plainest of terms, in the course of his recent report on the Van Ryn Estate, deplores the higher rates for native pay which the suicidal competition between the mining companies for native labour has brought about. He adds, "I still venture to hope, however, that this senseless rivalry will be eliminated by a mutual and commonsense agreement between the controllers of this mining industry to standardise both the cost of labour recruiting in open districts and the rates of pay to native labourers." Again, speaking at the annual meeting of the Van Ryn, Mr. Leopold Albu pointed out that the shortage of native labour was not only seriously hampering the present Rand production but preventing legitimate expansion. "While it is not always wise," he went on to say, "to refer publicly to questions of policy in the administration of an industry such as that with which I am associated, I may say, in the knowledge that the matter is more or less common property, that while the industry cannot help the shortage, it could have avoided the disastrous increased cost to the mines and the inefficiency of the workers arising out of the mad competition to secure labour." All this could have been avoided to a considerable extent if two groups, for reasons of their own, had not at the last moment withdrawn from a conference called to discuss an agreement, and decided to recruit independently. "We, together with the other Houses," continued Mr. Albu, "both here and in Johannesburg, endeavoured to impress these views and their urgency continually on the two outstanding firms—up to the present, I regret to say, our combined efforts have been in vain. Let us hope that the continued depression and the recent misfortune on the East Rand Proprietary will be the means of urging our views, and the legitimate grievances of all shareholders, with greater force and better results." It is noteworthy, moreover, that at the meeting of the Vogelstruis Estate, the Chairman said that Mr. Struben, of the London Board, returned recently from the mine, and during his stay in Johannesburg he was untiring in his efforts to show the hardships experienced by all low grade mines (outside of groups) caused by open competitive recruiting for native labour. He specially interviewed General Botha, the Prime Minister, the Minister for Native Affairs, some other members of the Ministry, the representatives of groups of mines and the Native Labour Association. In effect, General Botha's reply was: "What remedy does the mining industry suggest?" The reply made by some of the representatives of the groups was, in effect, "We feel justified in any steps which will maintain or increase our dividends." "With such a clear and defined position before us," said the Chairman of the Vogelstruis Estate, "I ask is it fair that one section of an industry should be injured by manifest oppression on the part of another section of the same industry? Mr. Struben has assured his co-directors that from his experience on the spot everything that could be done by this company has been done." It is useless for us to attempt to emphasise the importance of these statements. They prove, if anything were needed to prove, that the present insensate competition is responsible for the failure of the mines to reduce working costs last year, and for their disappointing showing in other ways as well. Plainly, it is high time the recalcitrant groups were brought to book.

AN IMPRACTICABLE SUGGESTION.

Of the many impracticable suggestions made as the outcome of the E.R.P.M. affair, perhaps there has been none more untenable than that such an incident would have been obviated by holding in London the annual meetings of Rand companies. Those who father the proposition fail to advance a single good reason to show that the change would have the desired effect, and they ignore, or forget, that South African companies that have always followed the practice advocated have, on the average, been no whit less unfortunate than those that did not. In this connection, it is only necessary to mention the scores of Rhodesian companies that came to grief, despite the fact that their annual meetings were invariably held in the City. The proposals were made in their most categorical form by Mr. Edmund Davis, the Chairman of the United Exploration Company, at the meeting held on December 13th. The Exploration Company, with considerable investments in South and West African mining companies, holds a large interest in the East Rand Proprietary Mines. Mr. Davis is reported to have said: "Previous to holding this meeting I thought that it might be advisable to discuss the position which had arisen and the suggestions I intend to make with some of those largely interested in the administration of the East Rand, and I came to the conclusion that it would be better to make our suggestions at this meeting, and, if so desired, discuss the matter hereafter. Now, what is wanted is to restore confidence in the mining markets, which the South African houses can easily do if they will arrange to give frequent and full information to the shareholders interested in the companies they control, and it may, perhaps, assist them were it made compulsory that such information should be given—a course they would, no doubt, be the first to welcome. In connection with this matter, it is necessary that I should first point out the inadequacy of the provisions of the English Companies Acts relating to foreign companies having offices in England. To remedy this state of things the section of the Act relating to foreign companies should be amplified, so that such companies, sending out notices of general meetings, furnish to the Registrar of Joint Stock Companies a statement of shares on the register of the United Kingdom, giving names, addresses and numbers held, and the number of shares represented by share warrants to bearer, and that while these two categories represent at least 50 per cent. of the capital, it should be obligatory that the directors' report and accounts should be circulated, with a notice of a meeting to be held in London one month before the general meeting, at which the directors could depute the registered agent to act for them if they so desired; that it should be the duty of the agent to report to the directors any resolutions passed at meetings in London and the number of votes represented, and that these resolutions be put at the general meeting and such votes to be taken into account. Further, it should be provided that if the shareholders were then not satisfied with the directors' management, it would be possible for them to resolve that the company be reincorporated in England, and thus secure control.

We sincerely trust that no step of the sort so glibly advocated by Mr. Davis will be taken without the fullest consideration. The administration of Rand mines is cumbersome and costly enough without further complicating it by duplicating annual meetings. If it could be shown that any deception on this side could be prevented by the innovation, we would be slow to oppose it. But it cannot be defended on that plea. In fact, it cannot be defended on any plea except that of change for change's sake. The present tendency to increase the taxation of the industry is only too likely to be strengthened by any action that would emphasise the "uitlander" or non-South African character of the interests involved. It is but right and fair that South African companies should hold their annual meetings in South Africa. The Government, the country and the industry owe it to themselves to resist to the uttermost any suggestion to the contrary.

GROUP MINES AND THE MARKET IN 1911.

Heavy Depreciation in Share Values Generally—The Prospects of the Market During 1912—Our Position in the Cycle of Changes.

The following tables show the variation in prices of the various group of mines of the Rand as at the end of 1910 and on December 5th, 1911, the latest date for which reliable figures are to hand. With a few exceptions, it will be seen, the prices are lower than they were twelve months ago. An additional column shows the amount of variation and the final one gives the dividend per share for 1911 :—

Company.	Price, end 1910.	Price, Dec. 5th, 1911.	Minus Difference.		Dividend per Share, 1911.	
	£	£	s.	d.	s.	d.
Albu Group—						
Meyer and Charlton	$4\frac{1}{8}$	$4\frac{1}{16}$	1	3	8	0
New Goch	$1\frac{13}{16}$	$1\frac{9}{32}$	10	$7\frac{1}{2}$	2	6
Van Ryn	$4\frac{5}{8}$	$3\frac{13}{16}$	16	3	9	0
Barnato Group—						
Ginsberg	$1\frac{3}{16}$	$1\frac{1}{2}$	+6	3	5	0
Glencairn	7s 6d	4s 6d	3	0	1	0
New Primrose ...	$2\frac{13}{16}$	$2\frac{1}{8}$	6	3	14	0
New Unified ...	$1\frac{5}{16}$	$1\frac{1}{8}$	3	9	3	0
Witwatersrand ...	$3\frac{5}{16}$	3	6	3	7	0
New Rietfontein ...	$\frac{1}{2}$	$1\frac{7}{32}$	+14	$4\frac{1}{2}$	1	0
Eckstein-Rand Mines Group—						
City and Suburban (£4)	$2\frac{1}{8}$	$2\frac{15}{32}$	+6	$10\frac{1}{2}$	9	0
Crown Mines (10s)...	$8\frac{1}{16}$	$6\frac{15}{16}$	22	6	11	0
Durban Roode. Deep	$1\frac{13}{16}$	$1\frac{9}{16}$	5	0	1	0
Ferreira Deep ...	$4\frac{15}{16}$	$3\frac{7}{8}$	21	3	9	0
Ferreira	$10\frac{1}{2}$	$4\frac{3}{4}$	115	0	40	0
Geldenhuis Deep ...	$3\frac{5}{8}$	$2\frac{1}{16}$	31	3	6	0
New Heriot ...	$4\frac{7}{8}$	$5\frac{1}{4}$	+7	6	16	0
New Modder (£4) ..	$12\frac{1}{16}$	$11\frac{3}{4}$	6	3	19	0
Nourse Mines ...	$2\frac{5}{8}$	2	12	6	4	0
Robinson (£5) ...	$10\frac{1}{8}$	$6\frac{3}{8}$	75	0	27	6
Rose Deep	4	$3\frac{5}{16}$	13	9	8	0
Village Deep ...	$2\frac{1}{4}$	$2\frac{3}{16}$	1	3	2	0
Village Main Reef ..	$4\frac{5}{16}$	$3\frac{1}{16}$	25	0	14	0
Farrar—Anglo-French Group—						
East Rand Prop. ...	$5\frac{3}{16}$	$3\frac{7}{32}$	39	$4\frac{1}{2}$	6	0
New Kleinfontein ..	$2\frac{3}{16}$	$1\frac{3}{4}$	8	9	3	6
Goerz Group—						
May Consolidated ...	$1\frac{3}{16}$	$\frac{3}{4}$	8	9	8	0
Princess Estate ...	$1\frac{7}{16}$	$\frac{3}{4}$	13	9	1	0
Gold Fields Group—						
Knights Deep ...	$2\frac{5}{16}$	$2\frac{9}{16}$	7	6	6	6
Robinson Deep ...	$3\frac{5}{16}$	3	6	3	6	6
Simmer and Jack ...	$1\frac{5}{8}$	$1\frac{15}{32}$	3	$1\frac{1}{2}$	3	6
Neumann Group—						
Cons. Main Reef ...	$1\frac{1}{4}$	$\frac{31}{32}$	6	$10\frac{1}{2}$	1	6
Main Reef West ...	$2\frac{1}{2}$	$1\frac{7}{16}$	21	3	3	6
Witwatersrand Deep	$4\frac{3}{4}$	$3\frac{3}{8}$	27	6	7	0
Wolhuter	$1\frac{1}{8}$	$1\frac{1}{4}$	+2	6	3	0
Robinson Group—						
Langlaagte Estate ...	$2\frac{7}{8}$	$1\frac{9}{16}$	26	3	2	0

Among the mines of the Albu group the New Goch and Van Ryn have shown a material falling off in price, and, with their possibilities, are evidently stocks that will be closely watched in the future. The Meyer and Charlton shows little diminution in popular appraisal. The Barnato shares all show a reduced value, with the exception of those of the Ginsberg, which is one of the few mines which are more favourably regarded at the moment in the market than they were twelve months ago. The New Primrose has lost less than half its dividend, while the New Rietfonteins have advanced in far greater proportion than any other share on the list. The Eckstein—Rand Mines group of properties show appreciation of two of the companies' shares, those, namely, of the City and Suburban and New Heriot. In other instances heavy depreciation has occurred, and at a glance the Crown Mines is seen to stand out prominently among the rest in this direction. The Village Main Reef, Robinson and Ferreira—the latter particularly—show signs of a wane of popular favour, consequent, no doubt, upon the fact that the end of both of them looms in the comparatively near future. The Geldenhuis Deep seems to have been chosen amongst the rest for a more marked expression of popular disapproval, a circumstance that is not to be wondered at in view of the irregular character of the monthly returns during the past few months. The Nourse Mines have had a fairly hard knock, and the Rose Deep has shared a similar fate. The least injury of any has been sustained by the Village Deep, and generally the attitude with regard to this stock appears to be a satisfactory one under the circumstances.

It goes without saying that the E.R.P.M. shares were bound to feel the effects of the recent disclosures in a special degree, and the depreciation in value to the extent of about 40s., or more than six times the amount of last year's dividend, shows the antipathy and suspicion of the market in a sufficiently emphatic way. One would perhaps be somewhat bold in asserting that the shares were cheap to-day, in view of the uncertainty that prevails with regard to the condition of the mine. The stock is undoubtedly one that will deserve some attention in view of future possibilities, however. New Kleinfontein, with the foreknowledge of reduced dividends, has fallen materially.

The Goerz group show a heavy depreciation in Princess Estates, a not unnatural circumstance in the existing transitory position of the mine and the diminution of confidence generally.

The Gold Fields dividend-paying mines, taking them altogether, have stood the brunt of market attacks better than those of any other group, except Barnato. The Neumann properties, except the Wolhuter, on the other hand, show a heavy depreciation, and have evidently been singled out for opprobrium. The Wolhuter is among the few Rand mines which show an advance in price over the period under consideration. The lessened value of the Langlaagte Estate shares follows as a matter of course from the diminishing profits of the past year, and this property is distinguished among all the rest on the list by the fact that the depreciation in value shown is far higher in proportion to the actual dividend than that of any other. This is, of course, to be accounted for by the delay in declaring the last half-year's dividend. It is to be presumed, of course, that some dividend will be declared, although at a diminished rate. The profits for 1910 were about £315,194; those for 1911, assuming that the December return will be on a par or thereabouts with that of November, will be about £246,450, a material reduction. In 1910, thirty per cent. was distributed as dividend, absorbing £260,850. It is probably being debated whether to declare a further 10 per cent., or less. There seems no reason to expect more.*

In the above list the fall in shares, taken altogether, is a heavy one. Without going at the moment into the merits of any of the companies referred to, or discussing the question of whether the dividends paid warrant the actual prices quoted, it may be said that the range of the fluctuations, the comparatively low level of prices, and the possibilities of many of the properties included in the list make it certain that those who buy now will have an opportunity of taking satisfactory profits on their transactions sooner or later. While not venturing into the field of prophecy, one may reasonably assume that the market barometer is at about as low a level generally as it is likely to reach during the present cycle of movements, for it is difficult to believe that anything worse remains to be said or revealed about the industry than has been said or unfolded during the past few months. There is, on the other hand, the certainty that boards of directors will make a special effort to establish confidence during the coming year, and will take steps to bring about a better understanding between themselves and those to whom they are responsible. Both the need and the occasion for such a line of action have arisen, and we, at least, have no doubt that both will be responded to.

---

*Since the above was written the Langlaagte has declared a 5 per cent dividend.

TUBE MILLING ECONOMICS.

Discussion on Mr. Standish Ball's Paper—Some Valuable Views.

At a meeting of the Institution of Mining and Metallurgy, held in London on November 10th, discussion was resumed on Mr. H. Standish Ball's paper, "The Economics of Tube-Milling." Mr. Ball has had universal praise showered on his valuable paper, and that Mr. W. R. Allen, in concluding his criticism of the contribution, should have declared, "The inconclusive nature of the results shows the need of further investigation," is merely a testimonial to the complexity and enormity of the subject. A most noticeable feature of the discussion that has arisen out of Mr. Standish Ball's paper has been the manifestation of a great divergence of opinions existing amongst metallurgical engineers upon nearly every aspect of tube-milling practice and economics. Of course, different mining and metallurgical engineers have had experience of different kinds of ore in different parts of the world, and it would be surprising to find a general uniformity of view on tube mill dimensions, running speeds, feed, and moisture questions, etc. In commenting on the paper, both Mr. A. G. Charleton and Mr. A. W. Allen regretted that Mr. Ball experimented with a machine of small size and unusual dimensions. It is clear that the figures given may need modification in practice in dealing with "standard size" tube-mills, and here the important question of the most efficient size of mill may be raised.

Mr. Philip Argall said he found that Mr. Alfred James at the close of his remarks on the previous occasion had mentioned three points on which tests were urgently required:—(1) The size of the coarsest economical particle; (2) The effect of introducing rough quartz blocks into a mill instead of pebbles; and (3) The effect of introducing quartz rounded balls from which the fragments had been separated. He thought the size of the feed had something to do with the size and weight of the falling pebble and the length of the mill. He had not seen any experiments of precision in determining the proper size of the feed to a mill of given length. Engineers in South Africa appeared to have found that a ½-in. feed gave the best results in their present mills, which he though were 22t ft. by 5ft. 6in. Probably the economical results would be better if the feed was ⅛ in. and the mill shorter. He thought a 22-ft. mill was too long for the best economic results. Of course the amount of feed would also cut some figure in those tests, because a mill with a given feed might deliver, say, a 100-mesh product, or a product the greater part of which would go through one hundredth in., and if that feed were increased the grinding capacity of the mill would not necessarily be much increased, but the discharge would be coarser. So that they had changing conditions, and it was possible that if tests were made to determine the relative size of the feed for a given length of mill some higher efficiency might be obtained in the milling.

Mr. Argall went on to speak of the important principle of step reduction of ores, which, he said, was now fully recognised on the Rand, but by linking the stamp with the tube-mill under the name of a crushing unit, the real issue was possibly obscured. Mr. Argall advocated that each machine should stand for the work actually performed by it in the successive commutation of ores.

Mr. Truscott at the previous meeting had gone over some of the ground, and had stated that there had been no increase in efficiency in the stamps in South Africa by increasing the weight, and that only by the use of coarser screens was higher efficiency reached. Hence, the stamps there to-day were performing the work of rock-breakers and rolls, and they could not, in his (the speaker's) opinion, do it with as high efficiency as the latter machines. The matter of tube mill efficiency was a question, as had been said, of the load, the feed, the moisture and the peripheral speed; the last word had not been said on any of these points. In many places—of course not in this country—the tube was looked upon as an absolute sliming machine. He had not found it to be so, and he did not believe that others had. The coarseness or fineness of the product to be delivered from a tube mill was easily kept under control by the amount of feed that was put in, and to some extent by the amount of water and length of the mill. His most recent practice was to use a tube mill for re-grinding in a concentrating works where they had sulpho-tellurides to liberate—a very friable mineral, as everyone knew—and he had got most excellent results; in fact for their product, which required the reduction of ore from 0.04 to 0.01 in. aperture, the tube mill was the most satisfactory machine he had ever used, and they had obtained high recovery from the middlings which were sent back to the tube mill preparatory to re-concentration.

Mr. H. Livingstone Sulman, President of the Institution, remarked:

A feature in the author's valuable paper is the prominence given to the "energy unit" as the selected basis of comparison for crushing efficiency. As the record of Mr. Standish Ball's work will deservedly secure wide consideration it seems desirable again to point out that Mr. Stadler's unit, though most convenient, if not indispensable, is yet but the hypothetical interpretation of the grading analysis of an ore. Notwithstanding its title, it must not be taken as necessarily implying any dynamometric measure of the crushing energy actually expended, although on fairly clean quartz fragments a reasonably close approximation thereto may subsist. It is essentially a statement of the average alteration in particle volume due to crushing effect, and we should be careful to avoid reading into it a meaning which does not strictly apply.

We anticipate the contribution of further valuable opinions to a discussion of this important subject, and in this we hope that the numerous keen students of Witwatersrand metallurgical practice will not be slow in coming forward with their views.

Luipaardsvlei Estate.

The Directors submit the following summary of operations of the Company for the quarter ended 30th September, 1911:—Mine: Number of feet driven, sunk, risen, etc., 2,738.5 ft.; ore developed, 30,242 tons; ore mined 61,255 tons, waste rock sorted out 12,250 tons, total 49,005 tons; ore in mill bins decreased by 875 tons; ore crushed, 49,880 tons; ore milled in excess of ore developed during period, 19,638 tons. Mill: During July an average of 60 stamps ran 29 days, 13 hrs., 26 min.; August, an average of 60 stamps ran 29 days 3 hrs. 55 min., September, an average of 60 stamps ran 28 days 3 hrs. 10 min.; total running time, 86 days 19 hrs. 31 min.; tons crushed, 49,880 tons; tons crushed per stamp per 24 hours, average 9.576 tons; yield in fine gold, 4,671.016 ozs.; yield per ton crushed in fine gold, 1.873 dwts. Tube Mills: Yield in fine gold, 1,754.796 ozs.; yield per ton crushed in fine gold, .704 dwts. Cyanide Works: Tons treated (equal to 70.66 per cent. of tonnage milled), 35,243 tons; yield in fine gold, 3,834.227 ozs.; yield per ton treated in fine gold, 2.176 dwts.; yield per ton crushed in fine gold, 1.537 dwts. Slimes Works: Slimes treated (equal to 29.34 per cent. of tonnage milled), 14,637 tons; yield in fine gold, 852.845 ozs.; yield per ton treated in fine gold, 1.165 dwts.; yield per ton crushed in fine gold, .342 dwts. Total yield in fine gold from all sources, 11,112.884 ozs.; total yield in fine gold per ton crushed, 4.456 dwts. Ore reserves at 30th September, 1911, 440,150 tons; less adjustment, 8,000 tons; total, 432,150 tons: cost per ton crushed, 16s. 11.598d.; extraordinary expenditure, £797 19s.; total cost per ton crushed, 19s. 9.779d.; profit on working carried down, £4,247 1s. 1d.; profit on accumulated slimes, £2,856 18s. 9d.: total amount, £49,418 9s. 8d. Capital Account: Amount spent on plant, buildings, etc., £1,402 10s. 1d.; amount spent on sinking, £1,829 14s. 4d.; amount spent on development, £6,791 3s. 7d.: less redeemed as above, £7,482; credit, £690 16s. 5d.; total, £2,541 8s.

VACUUM FILTRATION ON THE RAND.

Costs and Extraction Results of the Butters Filter—Excellent Work Done and Better Anticipated—A Profitable Process.

THE following notes are taken from a report by Mr. F. L. Bosqui, consulting metallurgist to the Central Mining and Investment Corporation, Ltd., upon the operations of the Butters filter plant at the Bantjes Consolidated, New Modderfontein and Crown Reef mines. The details are fully given, because they are of unusual interest not only with regard to the working of the Butters process, but generally with reference to the possibilities of slime treatment upon the Rand. Costs, it will be observed, range from 3·13d. to 4·07d. per ton of slime treated, and extractions between 90·1 and 95 per cent. There are, of course, various savings which are not dealt with in this report, as for instance that arising from the smaller proportion of solution per ton of dry slime which it is necessary to precipitate, and that consequent upon the more rapid carrying out of the slime cyaniding process, as compared with, say, the ordinary decantation process:—

BANTJES CONSOLIDATED MINES.

Total cost of slime treatment (including Butters filter and Brown agitators).

	May and June, 1911. Without Filter.		Aug. and Sept., 1911. With Filter.
Slime treated (tons)	16,640	......	17,890
Cost per ton of slime treated...	1/5·34d.	......	2/0·17d.

Cost of operating Butters filter (i.e., additional cost incurred over old system).

	August, 1911.		September, 1911.
Native labour	£4 6 10	......	£7 10 0
Chemicals	28 13 0	......	19 9 4
Electrical power	41 6 9	......	41 14 6
Air power	11 2 4	......	10 14 10
Assaying, etc.	47 4 5	......	32 5 3
General stores	—	......	8 1 6
	£132 13 4	......	£119 15 5
Cost per ton slime treated	3·425d.	......	3·347d.

Extraction Results.

1911.	Tons Slime Treated.	Original Value. Dwt.	Residue Total. Dwt.	Residue Washed. Dwt.	Percentage Extraction.
May	8,625	2·45	·617	·2	74·8%*
June	8,015	2·67	·915	·22	65·7%*
July	Changing over from A.-U. to Butters.				
August ...	9,300	2·50	·134	·10	94·6%†
September ...	8,590	2·77	·147	·11	94·7%†

*Adair-Usher system. †Butters and Brown agitators.

NOTES.—The increase in slime costs in August and September over June and July is not due altogether to the filter and will be considerably reduced during the next few months. Assaying is an extraordinary item, due to a large number of experimental assays made on Brown and Butters pulp and solutions in the progress of trials to determine proper duration of agitation, time required for washing in filter, etc. Zinc costs were considerably increased due to putting more zinc boxes into commission, and the cyanide consumption was increased, due to starting up Brown vats and experimenting with varying strengths of solution. On the present small slime tonnage (about 9,000 per month) the average total cost per ton of slimes treated is not likely to exceed 1s. 8d. No white labour is included in Butters costs, because, owing to the plant having excess capacity, no additional white labour is required.

NEW MODDERFONTEIN G.M. Co.

Total cost of slime treatment (including Butters filter).

	Tons Slime Treated.		Cost per Ton of Slime.
August	30,053	......	1/1·437d.
September	27,830	......	1/1·113d.

Separate cost of operating Butters filter.

	August.		September.
White wages	£64 7 0	......	£77 19 6
Coloured labour ...	51 7 6	......	48 3 11
Stores and materials..	140 1 3	......	68 15 10
Workshops	79 19 2	......	92 15 2
Power	146 15 4	......	137 9 5
Air power	25 0 0	......	25 0 0
	£507 10 8	......	£450 3 10
Cost per ton slime treated	4·053d.		3·882d.

Extraction Results.

1911.	Tons Slime Treated.	Original Value. Dwt.	Residue Total. Dwt.	Residue Washed. Dwt.	Extraction.
May	19,714	1·538	·265	·082	82·7%*
June	23,658	1·628	·234	·091	85·6%*
July	Changing over to Butters filter.				
August	30,053	1·744	·086	·077	95·0%†
September ...	37,830	1·807	·093	·082	94·8%†

*Decantation. †With Butters filter.

NOTES.—The sums charged to stores and materials and to workshops are unduly high, owing chiefly to repair on leaves. The system of dry discharge of filter cakes, peculiar to this plan, and not repeated in later installations, has been found to require a much stronger leaf than the one supplied; and until the whole set of leaves has been properly reinforced, the above items are likely to remain high. Under normal conditions, on the present slime tonnage of about 30,000 per month, the Butters costs should be about 3d. per ton.

CROWN REEF PLANT (OF CROWN MINES, LTD.).

Total cost of slime treatment (including Butters filter and modified Brown agitators).

	Tons Slime Treated.		Cost per Ton of Slime.
July	19,269	......	1/1·4d.
August	19,942	......	1/1·2d.
September	18,323	......	1/1·9d.

Separate cost of operating Butters filter.

	July.	August.	September.
White labour	£86 7 6	£77 12 6	£81 0 0
Coloured labour	9 6 2	9 13 3	12 18 0
Coloured labour sundries	5 11 0	5 6 7	5 4 3
Sundry stores	91 11 1	56 13 9	97 5 8
Workshops	6 9 8	9 13 11	27 8 7
Total power	89 0 0	101 0 0	87 0 0
	£288 5 5	£260 0 0	£310 16 6
Cost per ton slime treated	3·59d.	3·13d.	4·07d.

Extraction Results.

1911.	Tons Slime Treated.	Original Value. Dwt.	Residue. Total. Dwt.	Residue. Washed. Dwt.	Extraction.
July	19,269	2·038	·20 *	·132	90·1%
August	19,942	2·031	·20 *	·159	90·1%
September ...	18,323	2·023	·18 *	·151	91·1%

*Before the installation of the Butters filter the total slime residue at this plant ranged between ·35 and ·45 dwt.

Notes.—This plant has been handicapped from the start by the inclusion of accumulated slimes, very unsuitable for treatment, owing to presence of organic matter, etc., and to large percentage of coarse sand, improperly separated. This has rendered normal operation of stock tanks impossible, and has seriously affected the valves—so that repairs and renewals have been continuous and very troublesome. With the exhaustion of the supply of old slimes, the complete renewal of defective valves (now under way) and the enlargement of the plant to adapt it to the tonnage from the new Crown Reef mill, a very much better record of costs and extraction may be expected.

Summary.

It will be seen that while all these filter plants have proved profitable to the group wherever adopted, they are at present not doing the best work that may be expected of them. At the end of another six months a considerable reduction of working costs may confidently be looked for, as well as improved filtering efficiency. Interesting figures are forthcoming from the Robinson and Modder B. filters, which are not handicapped by any unusual conditions, and where, in design and construction, advantage has been taken of experience gained in the earlier plants.

THE TRENT AGITATOR.

Successful Trial Results at the Village Deep—A Type of Agitator Specially Adapted to the Rand—Small Speed, Power, and Wear and Tear.

The Trent Agitator, which is undergoing a trial at the Village Deep, is said to be doing satisfactory work, so much so, we understand, that there are strong indications that this type of agitator will be the cheapest and most adaptable to the conditions of the Rand of any of the various kinds suggested. The single charge of dry slime at the Village Deep is reported to be as high as 200 tons, and the power required on this basis is about 11 h.p. The agitator depends upon a centrifugal pump to circulate the pulp in the agitating tank, and upon compressed air to do the aeration and aid in the agitation. In fact, the air does the main agitation, but instead of being fed into a central tube, as in the Pachuca tank, it is fed into the intake end of the centrifugal pump, and supplied to the charge by means of jets issuing from rotating arms.

Thorough Aeration and Agitation.

In this way the air is greatly comminuted, and the whole mass of the pulp kept in a boiling, frothing condition, due to the many minute air bubbles which rise to the surface. So great is the impregnation of the pulp with air that there is a considerable swelling of the charge when air is turned into the agitator; and so minute are the bubbles that it takes quite a long time for them to rise to the surface. Settling of the coarser material on the bottom of the tank is prevented by pointing the jets on the rotating arms slightly downwards, so that a scouring effect is produced. The feed is drawn off at the top and returned through the bottom of the tank, so that the pump is working against a balanced head, and less power is, therefore, required in circulating the pulp. Wear and tear is obviated to a large extent by the low speed of the pump. There is obviously no regular cycle for the pulp which flows through the agitator, and to this extent it acts in accordance with the theory that extraction is better when pulp and solution are circulating in different cycles, so that the particles of ore and solution do not stay together throughout any long period of agitation.

Daggafontein G.M. Co.

The tenth ordinary general meeting of this Company was held on November 23, 1911. Mr. W. Bryson Butler (Chairman of the Company) presided. The Chairman, after referring to the accounts, said: As you have been already advised, it was not until November, 1910, that we were able to resume shaft sinking, and the progress between that date and June 30th last was slow. This arose from the nature of the formation through which we were passing, which consisted of decomposed dolerite, dolomite and chert bands and syenite. Sinking through this horizon has given rise to similar troubles in almost every shaft sunk in this district, involving slow progress and a heavy footage expenditure. We were fortunate in being able to obtain the benefit of the experience on other properties in similar difficulties to guide us, and although we could not obviate their occurrence on your property, we were able to be prepared for them. It was necessary to carry out very close timbering, and at many points to run in concrete rings, and beyond this, at the most dangerous zone, in what is locally known as the Green Dyke formation, we put in a solid timber and concrete wall round the entire shaft for a distance of 70 ft. at a point 166 ft. from the surface down to a depth of 236 ft. Up to this time the quantity of water handled in the shaft had been increasing, reaching a maximum quantity of approximately 24,000 gallons per hour—a quantity, however, which even with the equipment then installed was successfully handled. We arrived at the end of the financial year—June 30—with the shaft at a depth of 262 ft. I trust I am right in regarding the close of the financial year as synchronising with the close of the period of our greatest difficulties in connection with the sinking of this shaft. From that date until October 13—during which the formation was syenite—we may regard as the secondary period which was more satisfactory in its rate of progress and in its footage cost than hitherto. The details of progress are as follows:—July, 41 ft.; August, 46 ft.; September, 59 ft.; and October, 80 ft.; while the footage cost fell from £82 per foot in July to £47 9s. 8d. in October. From this you will see that the footage sunk during October was nearly double that achieved during the month of July at almost half the cost, and I have no reason to doubt that with a continuation of the more favourable circumstances we have now experienced that the October footage will ultimately be considerably exceeded and the cost greatly reduced. Looking to the experience of all our neighbours, it would be rash on my part were I to assure you that we are past all danger of a heavier inflow of water than we have met; but with the completion of the main winder our equipment is now capable of handling nearly three times the maximum quantity of water which we have hitherto experienced. By cable from Johannesburg we learn that on the 20th inst. the shaft had reached a depth of 538 ft., and the cable adds, "water giving no trouble—everything working satisfactorily—main winder engine erection completed." From the balance-sheet you will see that the available resources of the Company at the close of the financial year under review were approximately £100,000. I am glad to say that the great bulk of the necessary outlay on equipment and buildings is included in that expenditure, and if the conditions encountered from this date are of a normal character we look to being able to keep our expenditure down to little more than what is involved by the shaft footage. We have still an estimated footage of 160 ft. to sink in the dolomite before reaching the Black reef and quartzites, and until we arrive at that point it would be premature to rely on our escaping all further water trouble. But it is satisfactory to you to know that our advisers, while unwilling to commit themselves to a definite statement, lean to the view that our progress now will not be interrupted by abnormal conditions. At the present rate of sinking the quartzites should, judging from our borehole results, be entered by the early part of January, and if that programme be achieved, as we have every reason to believe it will, we shall have cause for some congratulation.

National Diamonds.

The scheme of reconstruction which is being put before the shareholders in the National Diamond Prospecting and Developing Syndicate provides for a nominal capital of £32,000 in 5s. shares, distributed as follows:—Working capital, £10,000, reserve £2,500, shareholders in National Diamonds £3,750, under option of £1,000, vendors and underwriters £14,750. Subscribers are to make their payments in five one shilling instalments, on application, allotment, and at 30, 60, and 90 days thereafter respectively.

Mines of the Witwatersrand.

V.—LUIPAARDSVLEI ESTATE AND G.M. CO.

Improving Profits—Profitable Ore Reserves Close on Half a Million Tons—The Company's Financial Position.

Amongst those mines which are rather outside the control of the large Rand groups, the Luipaardsvlei Estate and G.M. Co. has always attracted a large amount of attention. The head offices of this concern are in London. The Consolidated Gold Fields of South Africa and Messrs. Ehrlich and Co. are interested, and the local management is entrusted to the Consolidated Gold Fields Company.

Returns to Date.

To go back a little into the history of the company, it may be recalled that in accordance with modern crushing methods a new 60 stamp mill of heavy pattern (each head weighed 1,630 lbs.) and three tube mills commenced crushing in April, 1906. For the year ending with June 30th returns since that date have been as follows:—

	Stamps.	Tons milled.	Sorting. per cent.	Revenue.	Profit.
1907 ...	60	166,654	13½	£247,389	£77,282
1908 ...	60	185,579	14½	255,834	79,851
1909 ...	60	197,923	15¾	232,052	53,411
1910 ...	60	198,943	16	197,056	10,683
1911 ...	60	204,022	17·1	209,443	27,327

It will be observed from the above that the 1911 profit is very much better than that secured during the preceding twelve months, although it falls substantially below the amounts earned in previous years. Since the conclusion of the year the improvement has been well maintained, the working profit for the September quarter amounting to £7,902, and the total profit to £9,846. A greater amount of ore is now crushed than when the new equipment was first started up, but the recovery has fallen, and despite the successful efforts of the management to reduce working expenditure the profit earned last year was less than that won in any year other than 1910.

A Good Year's Work.

Shareholders are, however, to be congratulated on the results secured during the last financial year, for despite an acute shortage of native labour (amounting to about 30 per cent. of the complement) and a continued decline in ore grade, a good margin of profit has been maintained. In addition to this, the following favourable features are disclosed as a result of the past year's working:—

1. Working costs have been reduced.
2. The ore reserves have been added to, and now stand at approximately two and a half years ahead of milling requirements.
3. Payable stretches of South Reef have been found in several of the western drives, where the reef had not been found of payable nature previously.

This latter point is of especial importance, not only because the discovery promises to augment the ore reserves to a very substantial degree, but also because its development can be carried out at comparatively small expense from the existing levels in the mine.

A Large Proposition.

In regard to the Luipaardsvlei Estate, it should be borne in mind that up to the present the Company has only dealt with the outcrop portion of its ground to the West. The number of claims worked out by the Company to date is comparatively insignificant, and there still remain untouched 520 claims on Main Reef, 567 claims on South Reef, and 70 claims on Battery Reef. The life of the mine is, therefore, a long one, and, having regard to the extent of unexplored ground, it would seem that there is every chance of further rich chutes being discovered in the property, and of the policy mooted some time ago of increasing the reduction plant being a thoroughly justified move. In 1907 and 1908 the Company was enriched by reason of the working of a rich chute of ore, but this, it appears, has been worked out, and the management is now engaged in endeavouring to locate other rich patches. Several of the more important levels, notably the 10th, 16th, 18th, and 20th, are now each showing better values in the eastern drives. The 19th level West Main Reef winze is showing good values, and in the Battery Reef mine fair values are again being encountered in the first drive west. By the acquisition of the Windsor G.M. Company's property and assets in April, 1909, the Company largely increased its scope and prospects, and apart from the two separate blocks of Mynpacht ground, the Company now owns a compact block of claims extending right along the outcrop section from the eastern boundary of the Lancaster West and York Mines to the western boundary of the French Rand.

Recent Developments.

In March last development and prospecting work was re-started at the Battery Reef Shaft. The values obtained so far are sufficently encouraging to warrant further work, payable ore being developed on the 1st Level Westwards, and by two winzes being sunk from the 1st Level West and 2nd Level East. The 2nd Level West, however, has been driven for a considerable distance on unpayable reef and is being continued in the hope of meeting with improved values. The 4th Level West is in the same position. So far all the later prospecting on this reef has been done in the Western Section of Luipaards Vlei. If results warrant it, prospecting operations may be undertaken later on the Windsor side, where old workings on this reef already exist. This reef, however, is split up into sections by extensive faulting, which interferes with continuous prospecting from one shaft. The expense of re-opening the Battery Reef Shaft and the development to date has been included in the development expenditure and charged against Working Costs. The total tonnage fully developed as at 30th September, 1911, is estimated at 432,150 milling tons of an average assay value of 5.220 dwts. per ton, and 264,848 tons of low grade ore of an average assay value of 2.860 dwts. per ton.

The Financial Position.

The amount at the credit of Profit and Loss Account for the year is £23,310 16s. 4d., and this amount, added to the sum already standing to credit of Profit and Loss Account, increases the same to £95,377 8s. 3d. In compliance with the recommendation of the Manager the sum written off for Depreciation was £14,768 17s. 11d., leaving a balance of £80,608 10s. 4d. to be carried forward. A considerable amount of this working profit has been devoted, as has been the case during the last three years, to the expenditure required for machinery, surface works and development, and it has been unnecessary to make use of the temporary loan which was arranged for as stated in last year's Report. During the year the Debenture Debt was reduced by the purchase of £2,460 debentures, and since then, at 1st July of this year, a further sum of £5,250 has been paid off in respect of drawn debentures.

The Estate Assets.

A few words remain to be said under this heading since the estate of the company is a very valuable asset. The revenue from the estate is satisfactory, and growing a little, whilst from year to year the value of the company's extensive tree plantations is increasing. The number of claims paying licences are over 4,300, half the payment going to the Government and half to the company. The homesteads on the estate belonging to the company are let at fair rentals, and some revenue has recently been coming in from stone quarries on the estate. The population is increasing, and building goes on accordingly, especially along the northern part of the estate, through which the railway runs, and where the Krugersdorp station is situated. Taken altogether the position of the company to-day may be said to be an improving one, and both in regard to underground disclosures and finances the position of this West Rand concern appears to be satisfactory.

PRINCESS ESTATE PROSPECTS.

Reorganisation of Plant Completed—More Labour Required.

The Princess Estate and Gold Mining Company, which re-entered the dividend-paying list in December, 1908, after an absence of about eight and a half years from the schedule of distributors, declared only one dividend last year—the five per cent. distribution announced in June last. It should be explained that since the absorption of the Roodepoort Central Deep Company's adjacent property, a large amount of reorganisation has been proceeding, and this has naturally affected returns. In the first quarter of 1911 the company milled close on 50,000 tons with 110 stamps at work, and earned a profit of £14,333, being at the rate of 5s. 10d. per ton. In the next quarter a smaller quantity of ore was sent to the battery, working costs were a little higher and as a result the profit came to £12,125, or 5s. 4d. per ton. In July and August the rates of earning were less than one shilling per ton, but in September the rate improved to 1s. 8d. per ton. In October 70 stamps were at work, and these crushed 10,387 tons, the value of gold recovered was £13,148, and there was a resultant net loss of £1,291 due to absorption of gold in the new plant and furnace.

In November the company turned the corner, and with 80 stamps at work recorded a small profit. Last month the reorganisation of the surface plant was completed, and the mine is now in a position, provided sufficient native labour is available, to deliver ore at the rate of 216,000 tons per annum. Of course the December returns will be effected by the change over, and it should always be borne in mind, with regard to the Princess and the Roodepoort Central Deep mines, that the South Reef here is of very narrow width, though of comparatively rich assay value; accordingly machine drills cannot be used very extensively in the property. It is important to note, however, that recently the Main Reef body has been drawn on, whilst during the past quarter the management have been experimenting with stoping by small drills, with a view to effecting further economies underground. The Princess Estate is a property which feels the pinch of labour shortage more than most mines on the Witwatersrand, and with an improvement in supply much better results can be safely looked for.

Munro Gold Mines.

The case was heard this week of W. G. Baker and A. W. Baker v. Munro Gold Mines. The plaintiffs claimed (a) cancellation of certain agreement passed between plaintiffs and defendants before notary Robert Walter Hearle, on October 29, 1909, respecting the lease of certain mining property consisting of certain mining property, claims and water, on the farm Middelvlei, No. 6, Krugersdorp District; (b) ejectment of the defendants from the property; (c) payment of the sum of £330 15s., being for rent and licences due under the said agreement, namely, £397 10s., less £66 15s. paid on account. Judgment was granted as prayed.

Zaaiplaats Tin.

DECEMBER OPERATIONS.

Extract from the manager's report of the results of operations at the Zaaiplaats Mine for December:—Mill ran 26·75 days; tons ore crushed, 2,458 tons; duty per stamp per 24 hours, 6·125 tons; average yield concentrates, 5·899 per cent.; concentrates won, 145 tons; average value of concentrates, 70 per cent. tin; total development driven, risen and sunk, 226 feet; tons of ore mined, 2,106 tons; and tons taken from surface dumps, 352 tons; estimated cost, not including realisation charges, £2,680. The native labour position is slightly improving; there are now 540 in the compound, and we anticipate a considerable increase during the present month. The general health of the camp is excellent. The supply of water for milling and general purposes is plentiful, there having been good rains during the past week. At the mill two six-feet frue vanners have been added to the concentration plant, and are now running. The mine continues to open up satisfactorily.

Langlaagte Estate.

5 PER CENT. DIVIDEND.

The directors of the Langlaagte Estate notify the declaration of a dividend (No. 43) of five per cent., 1s. per share, for the half-year ended the 31st of December, payable to shareholders registered on that date. The dividend will be paid on or about the 10th of February. The amount to be distributed is £43,475.

Modderkraal Affairs.

We understand that the farm Modderkraal will be proclaimed next month, when about 600 morgen will be thrown open as a diamond digging. This farm is about eight miles from Harrisburg station, and is quite close to the Vaal River, which ensures a plentiful supply of water. As will have been seen from our columns, quite good returns have been made by the prospectors, and from what we hear the prospects of finding are good. We understand that arrangements have been made for a motor service from Harrisburg station. The trading rights are in the hands of well-known firms, and we have no doubt but that diggers will have no difficulty in getting all the supplies they require and good treatment. Among the finds other than those already reported by Mr. Kleinhans, a Mr. H. A. de Beer found in his first week's work four stones, which were sold by him as follows: One of 15½ carats for £85, one of 7½ for £90, one of 4½ £4 17s., and one of a carat for £3 10s.; total, £183 7s. Another digger found seven stones in four days, one of them being a good diamond of 7 carats, and the others of varying sizes.

NEW YEAR HONOURS FOR RAND MINING MAGNATES.

Sir Lionel Phillips, Bart.

Sir Sigmund Neumann, Bart.

Sir George Albu, Bart.

PROSPECTS OF THE ANGLO-GERMAN TINS, LTD.

Details of the Flotation—Latest Developments—Dr. Jorissen's Second Report.

Much local interest is taken in Anglo-German Tins, Limited, which was registered at Pretoria on 3rd November, 1911, with a capital of £35,000, of which £30,000 is issued capital. The Directors are: Messrs. J. Frank Brown, C.M.G.; P. Ross Frames, and Herbert Moss, and the address of the Company is Trust Buildings, Johannesburg. On 9th November, 1911, the Company entered into an agreement with Mr. C. A. Russell to acquire twenty-two (22) claims on the farm Dawib, near Usakos, German South-West Africa, at a price of twenty thousand pounds.

Mr. Russell held these claims under notarial option contracts registered at the Mining Office, Windhuk. Out of the purchase price Mr. Russell settled with the registered owners, and the terms of his contracts with them were fully disclosed in the prospectus.

The property had been examined and reported upon by Dr. E. Jorissen, Consulting Geologist, whose report of 12th October, 1911, was submitted for perusal to all intending subscribers, and extracts from which appeared in the South African Mining Journal of 21st October, 1911. Mr. F. E. Coe was appointed Mine Manager, and sailed on the 15th of November for Capetown, accompanied by Dr. Jorissen. Dr. Jorissen returned to Johannesburg towards the end of December, and his report of 29th December was in due course submitted to the Directors.. During Dr. Jorissen's visit he wired to the Company, on 10th December, as follows: "Have just started opening up trenches. Struck more tin number five trench. Good reef found Claim 13,159," and since his return, viz., on 29th December, a wire was received from the Mine Manager in the following terms:—"Discovery large pieces of tin on the west side of Half and Half Hill, also on the north-west side of Claim 13,151, and fissures carrying good tin on the west side of Claim 12,350. The discoveries are quite distinct from others." Dr. Jorissen has now brought back with him samples of the various lodes and reefs weighing in the aggregate well over half a ton. Each claim in German South-West Africa is equal to twenty-seven claims in the Transvaal, and the area of ground owned by the Company is over six square miles. The samples of tin ore on view at the Company's office are quite exceptional, and include one lump of tinstone weighing approximately 400lbs. The alluvial tin is also exceedingly rich with pebbles of particularly pure cassiterite weighing as much as twelve ounces each.

At the time of the formation of the Company some anxiety was felt as to whether the lode, from which the big tin crystal and other large lumps were detached, was a permanent lode, but the concluding paragraph of Dr. Jorissen's second report, extracts from which we append, he says that the tin does go down, but that too little work has been done to expose the direction of the fissures. With regard to the find on Claim 13159, Dr. Jorissen's second report shows that he believes that this find should lead to the discovery of the origin not only of the alluivial tin already found, but to more deposits of a similar nature. A glance at the sketch plan of the claims shows that tin has not been discovered in one place only, but on various claims, embracing a very large area of ground, and if proved to exist in payable quantities, there is every likelihood that Anglo-German Tins will have the honour of being the parent of many subsidiary flotations.

Through the courtesy of the directors we are enabled to print the following extracts from Dr. Jorissen's report dated 29th December, 1911:—

Prospecting.—In the sketch of Trench No. 5 (pages 19 and 20) a large mass of quartz is shown. This mass of quartz was removed, and in turning it over a lump of tinstone was found embedded in it. I reported this to you in my telegram of the 9th inst., reading as follows:—"Have just started opening up trenches. Struck more tin No. 5 trench. Good reef found claim 13159." You will remember my mentioning the occurrence of very rich tin ore picked up on claim No. 13159 (page 24). I went over part of this claim with Mr. Botha, and was successful in finding the outcrop of a pegmatite lode, containing thin veins or leaders of quartz and tinstone. Several specimens of this lode have been brought back, and will be sent to you as soon as they arrive here. I attach great importance to this find, which was reported in the latter portion of my telegram of the 9th., quoted above, and this for the following reasons: The tinstone, instead of being disseminated through the pegmatite and greisen lodes, as for instance, on claims Nos. 12132, 12131, 13151, etc. (page 22), occurs, as already said, in quartz-leaders in the rock, and the ore is very rich. The tinstone is grey and white, similar to the alluvial tin and very pure, containing at least 75 per cent. of metallic tin. Following the strike of this lode towards the west, it is seen to run along the gully, where the alluvial tin was found, and I am certain that this alluvial tin has come from this or similar lodes. There are many more pegmatite lodes in this claim, which will have to be prospected by trenching north and south, that is cutting across them. The claim lies in flat country, and the lodes, instead of standing out from the surface, are covered with surface soil, etc., so that it will take some time before satisfactory results are obtained. I returned again to Dawib on the 14th inst., and inspected the work done during my absence.

Trench No. 5.—A good deal of tinstone has been taken out here, near and below the spot where the first tin was found, and the red-altered-felspar-rock is still found in the bottom of the trench some eight feet deep.

Trench No. 3.—This is the trench where the large mass of tinstone was found. Underneath this spot another crystal of fair side was taken out together with several smaller pieces. The other trenches were not touched as there was not sufficient labour available.

Labour.—So far Mr. Coe has been able to secure twenty boys only, but I trust that by the end of this month he will have secured his full complement of fifty boys, when he will start on the other places as well. The labour is not too good, but better than we expected from what people had told us, and I have no doubt that there will be no trouble once the natives have learnt their work, and the bad ones have been weeded out.

Dr. Niess.— I had several satisfactory interviews in Windhuk and elsewhere with the Assistant Government Mining Engineer, Dr. Niess, who extended to Mr. Russell and myself all possible courtesy and assistance.

Conclusion.— Although at the time of my second visit little work had been done owing to inevitable delay in starting a new enterprise in a place so far removed from Johannesburg, the results already obtained may be considered to be very satisfactory indeed. Already more tin has been found in trenches Nos. 3 and 5 in the solid rock, showing the tin to go down. Too little work has been done to expose the direction of the fissures. The tin carrying zones seem to dip south-west into the pegmatite bodies, but it will take some time before reliable and exact knowledge of their nature and behaviour will be gained. The new find on Claim No. 13159 is most promising, and should lead us to the origin, not only of the alluvial tin already found, but to more deposits of a similar nature. In conclusion, I can say that so far the results obtained fully bear out my remarks and conclusions in my report of the 12th October, 1911.

DIVIDENDS FOR 1911.

Complete Returns—Gold, Diamonds, Coal, Tin and Financial Companies.

Last week we gave the complete list of dividends declared by Rand gold mining companies, including the Nigel. This week we add those declared by other companies, and separate the Rand from outside districts:—

Gold—Witwatersrand	£7,719,610	
.. Outside	303,351	
		£8,022,961
Diamonds		300,000
Coal ..		250,602
Tin		163,250
Total		£8,736,813

Dividends declared by the principal finance and mining finance companies are given separately. The total amount divided and divisible from mining operations in gold, diamonds, coal and tin is £8,736,813, a decrease on the amount distributed from the same source in 1910 of £852,250. The dividends derived from the Witwatersrand are responsible for a decrease greater than the total decline. Outside districts in gold, and both coal and tin, declared larger dividends than in 1910. From gold, the amount obtained for distribution is £7,719,610, or a decrease of £1,085,897 on last year's figures available on December 31st. The contribution from the Witwatersrand of £7,719,610 is short of last year's total by £1,155,475, while from outside districts there is an increase of £54,578. From the Premier Diamond Mine, the only diamond mine in the Transvaal which distributes dividends, there is an increase in the amount of dividend declared of £120,000, and the Government's proportion of the profits has benefited by £72,000 more than for 1910. From coal there is the appreciable increase of £85,688, and from tin an addition is made to the total amount of £117,950, the improvement in distribution being from £45,300 in 1910 to the above figure of £163,250.

OUTSIDE GOLD MINES.

Name of Company	Date of Declaration.	No. of Dividend.	Rate per Cent.	Rate per Share.	When Payable.	Amount Distributed and to be Distributed.		Issued Capital.	Total Distributed to Date by these Mines.	
				s. d.		£	£	£	%	£
Glynn's Lydenburg	Jan. —	19	10	2 0		17,000				
Do.	July —	20	15	3 0		25,500				
							42,500	170,000	240	403,366
Nigel	June 15	30	7½	1 6		16,733				
Do.	Dec. 15	31	7½	1 6		16,733				
							33,466	223,106	397½	780,899
Transvaal G.M. Estates ..	Mar. —	10	15	3 0		90,634				
Do.	Aug. —	11	15	3 0		90,634				
							181,268	604,225	125	755,280
Sheba	Nov. —	—	5 & 5	2 0			26,973	269,738		
Worcester	June 6	5	10	2 0		9,572				
Do.	Dec. 8	6	10	2 0		9,572				
							19,144	95,722	47½	43,074
Total (Outside)							303,351			
GRAND TOTAL							8,022,961			

DIAMOND COMPANIES.

Name of Company.	Date of Declaration	No. of Dividend.	Rate per Cent.	Rate per Share.	When Payable	Amount Distributed and to be Distributed.		Issued Capital.
				s. d.		£	£	£
Premier (Preferred, 5/-) .. .	April —	13	125	6 3		50,000		
Do	Oct. —	14	125	6 3		50,000		
							100,000	40,000
Do. (Ordinary, 2/6) .	June —	6	200	5 0		80,000		
Do do.	Dec. 8	7	300	7 6		120,000		
							200,000	40,000
Total							300,000	

COAL COMPANIES.

Name of Company.	Date of Declaration.	No. of Dividend.	Rate per Cent.	Rate per Share	When Payable.	Amount Distributed and to be Distributed.		Issued Capital.	Total Distributed to date by these Mines.	
				s. d.		£	£	£	%	£
Apex	June 12	14	5	1 0	Aug. 5	15,000				
Do.	Dec. 14	15	5	1 0	Jan. 31	15,000				
							30,000	300,000	162½	286,250
Clydesdale	June 16	11	5	1 0			9,000	180,000	65	95,000
Witbank	Jan. —	12	15	3 0		31,500				
Do.	Aug. —	13	15	3 0		1,500				
							63,000	210,000		
Anglo-French Navigation	June 12	1	6¼	1 3		7,500				
Do.	Dec. 14	2	2½	0 6		3,000				
							10,500	120,000		
Transvaal Coal Trust	Dec. 15	24	7½	1 6	*		40,932	500,000		
Cassel			5	1 0	Feb. —	10,000				
Cassel Coal Co.	Dec. 19	8	6¼	1 3		12,500				
							22,500	200,000		
Transvaal and Delagoa Bay Investment Co.	Nov. —	9	15	3 0			27,750	185,000		
Middelburg Steam Coal and Coke	Oct. —		5	1 0			11,185	90,109		
East Rand Coal and Gold (2/6)	Dec. 19	2	10	0 3	Mar 12		4,755	47,550		
Coronation	June —		6				4,980	83,000		
Total							250,602			

* After receipt of London transfers.

TIN COMPANIES.

Name of Company.	Date of Declaration	No. of Dividend.	Rate per Cent.	Rate per Share.	When Payable.	Amount Distributed and to be Distributed.		Issued Capital.
				s. d.		£	£	£
Rooiberg Mineral and Development Co.	June 12	1	7½	1 6	Aug. 5	13,500		
Do.	Dec. 13	2	7½	1 6	Jan 15	13,500		
							27,000	180,000
Swaziland Tin	June 14	9	7½	1 6	Aug. 1	6,150		
Do.	Dec. 20	10	5	1 0	Jan. 22	4,100		
							10,250	82,000
Zaaiplaats (5/-)	Jan. —	4	50	2 6		30,000		
Do.	April —	5	50	2 6		30,000		
Do.	July —	6	60	3 0		36,000		
Do.	Oct. —	7	50	2 6		30,000		
							126,000	60,000
Total							163,250	

FINANCIAL, INDUSTRIAL AND LAND COMPANIES.

Anglo-French	April —		7½	1 6		37,500		500,000
Elandsfontein Estate	Feb. —	44	5	1 0		1,500		
Do.	Dec. —	45	5	1 0		1,500		
							3,000	30,000
Consolidated Gold Fields (Pref.)	June —		6				75,000	
Do. (Ordinary)	Feb. —		10	2 0		200,000		
Do.	Nov. —		15	3 0		300,000		
Do. (bonus)	Nov. —		5	1 0		100,000		
							600,000	2,000,000
General Mining and Finance	Mar. —		7½	1 6			140,625	1,875,000
Johannesburg Consolidated Investment Co.	June —	14	7½	1 6			296,250	3,950,000
Adair Usher	June —		2½			1,336		
Adair Usher (15/-)	Dec. —	6		0 3		891		
							2,227	53,437
Johannesburg Estate Co.	June 15	28	2½	0 6			5,000	200,000
West Rand Main Reef	Jan. —	7	5	1 0			1,250	25,000
Kleinfontein Estate	Mar. —	11	5	1 0		4,250		
Do.	June —	12	10	2 0		8,500		
Do.	Sept. —	13	5	1 0		4,250		
Do.	Dec.	14	10	2 0		8,500		
							25,500	85,000
Rand Mines (5/-)	June —	16	110	5 6		584,649		
Do.	Dec. 15	17	110	5 6	Feb. 12	584,649		
							1,169,298	531,499
S.A. Gold Trust			7½				37,500	500,000
Pretoria Cement	Dec. 19	8	30	6 0			42,000	140,000

GEOLOGY OF THE WITWATERSRAND.

Results of Dr. Mellor's Investigations—A Composite Section of the Lower Witwatersrand—A Valuable and Interesting Paper.

We take the following notes and sections from a very lengthy and most important paper which has been prepared by Dr. Mellor, of the Geological Survey, for the Geological Society of South Africa. The map and paper will appear in the next issue of the Society's transactions, and we recommend every one who takes an interest in the geology of the Rand to obtain a copy of it:—

Particulars of beds included in the Normal Section of the Central Rand.

Note.—The initial letters refer to the composite section and also to the Witpoortje section. The figures in brackets represent approximate estimated thicknesses in feet; where based upon a special locality its name is also given.

The terms "shales," "sandstones," etc., used in the descriptions refer to the appearance and condition of the rocks as seen at the surface or in shallow prospecting works, since such descriptions are most likely to be of general use. In depth the arenaceous beds are, of course, practically all quartzites, usually bluish or greenish grey in colour, and the argillaceous beds generally hard dark blue or greenish rocks in which slaty cleavage is frequently but not universally developed. Nearly all the argillaceous beds show a tendency in places to more sandy types with a corresponding change of the individual laminæ into beds, sometimes of considerable thickness. The term "ferruginous" has been used in many descriptions in place of the term "magnetic" frequently applied to some of the Witwatersrand shales. The test often applied to such beds, viz., their capacity for affecting a compass needle, is very misleading, as this property may be markedly shown by, or entirely absent in the same beds, at different points along the strike, or even in the same outcrop, and a large proportion of the shales show this property to some degree. The term "magnetite shales" would be better, but the frequent conversion of the magnetite into hematite in outcrops renders this term also inapplicable in many cases.

A. *Orange Grove Quartzites.*—Comprise several bands of quartzite separated from each other by shaly or schistose beds. The main group of hard quartzites which form the prominent ridge and escarpment of the Witwatersrand overlooking the granite area includes the quartzites a^1, a^2, a^3, while the quartzites included under A$_2$ form a subsidiary group with much less prominent outcrops, separated in the Johannesburg area from the main body by a considerable interval occupied largely by a diabasic intrusion. West of Newlands and Claremont the quartzites of A$_2$ come much nearer the main body.

- a^1. Very hard, yellowish white quartzite, fine grained, compact and brittle, sometimes glassy (40 feet, Orange Grove.)
- a^2. The largest continuous body of quartzite (180 feet Orange Grove), usually forming the crest of the ridge.
- a^3. Yellowish white quartzite, similar to a^1, fine to medium grained, very hard and compact. (20 feet, Orange Grove.)

A2. Consist of a group of four or five harder bands of quartzite, yellowish white or occasionally brownish, fine to medium grained, alternating with much softer, easily weathered, fine-grained sericitic and schistose portions inclining to sandy shales. It takes no part in the formation of the main escarpment north of Johannesburg, but has a very marked outcrop in Parktown West and Melville, where it forms a conspicuous ridge. Well developed also at Houghton Estate, Observatory and Bellevue. (200 feet, Observatory, inclusive of shaly bands.)

B. *Water Tower Slates.* Usually rather hard, shaly, slaty and flaggy beds, reddish or brownish black, very ferruginous, especially one band which usually forms a very conspicuous outcrop, as at the Water Towers in Parktown. (800 feet, Observatory.)

C. *Ripple-marked Quartzite.*—Very hard quartzite, greenish grey on fresh surfaces; usually not more than 20 feet.

D. *Red Shales.*—Moderately soft slaty shales, dark red in colour, easily weathered. Usually occupy lowest ground between Orange Grove and Hospital Hill Quartzites. (750 feet, Observatory.)

E. *Speckled Bed.*—A thin band of medium to coarse-grained quartzite, often containing a fair proportion of felspathic material, becoming an arkose. (Thickness, 4 to 5 feet.)

F. *Hospital Hill Slates.*—For the most part rather hard slaty or flaggy beds, reddish, purplish or brownish black in colour. Usually somewhat ferruginous and markedly so towards the lowest portion about the *Contorted Bed* f, a zone of conspicuously banded, hard, very fine-grained, flaggy, siliceous or jaspery-looking beds, alternately poor and very rich in ferruginous material, mainly magnetite. Also include moderately thick beds of very fine-grained quartzitic character, rich in iron. (700 feet, Observatory.)

G. Very dark, rather soft, usually much-weathered shales. Often bluish or purplish black when exposed. Similar in general character to some of those below the Hospital Hill Quartzites, and like them frequently ferruginous, especially G$_2$, which is sometimes also banded or striped, and then resembles the striped portion of Hospital Hill Slates. (G$_1$ 400 feet, G$_2$ 100 feet, Brixton.)

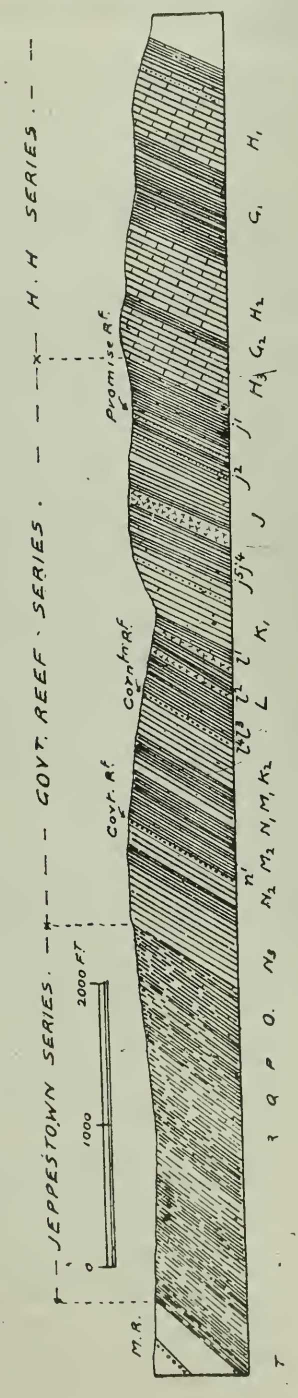
H. *Hospital Hill or Green Quartzites.*—A series of three thick bands of quartzites alternating with shales. Frequently tinged with pale green, especially on bedding planes. Fine to medium grained. Grains often well-rounded, especially in occasional coarser bands, and then often clear and set in an opaque fine-grained matrix, giving rise to the appearance locally known as "sago structure." The coarser bands increase in frequency and in size of constituent grains upwards in the series.

H$_1$. The lowest of the three bands mentioned above, average thickness about 600 feet. "Sago" bands rare. About 100 feet at bottom inclined to thin bedded and flaggy structure, passing gradually into the shales below. In several localities shows a wash of small pebbles scattered through one of the quartzite beds in the lower portion of the band.

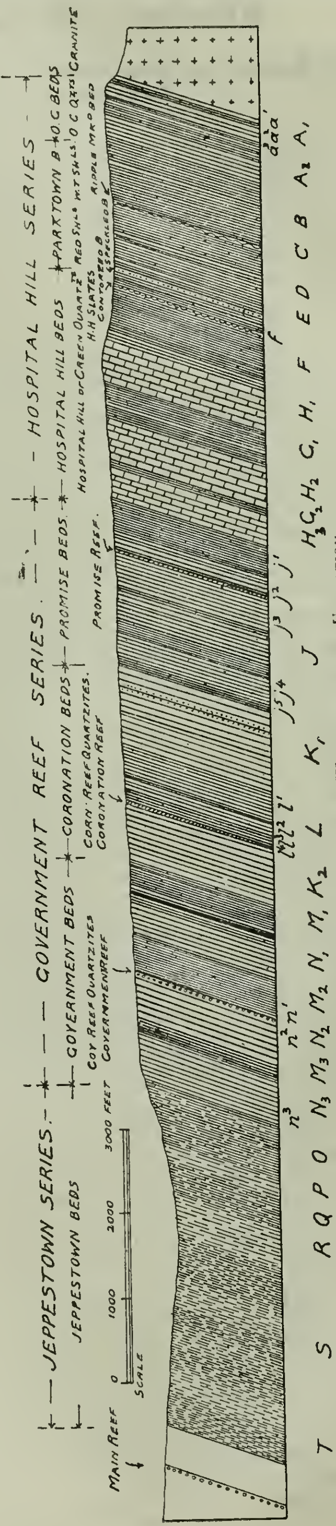
H$_2$. Similar to H$_1$ but not so fine-grained and with more frequent sago bands. Average thickness 450 feet.

H$_3$. Similar to H$_1$ and H$_2$ but coarser. "Sago" bands very frequent, especially towards the top, and very coarse with well-rounded grains. (Average thickness 300 feet, Florida, Witpoortje.) Quartzites H^2 and H^3 inconspicuous or not visible in the Johannesburg section but well seen from Brixton westwards.

J. *Promise Reef Beds.*—A succession of beds showing comparatively rapid alternations as compared with the beds below, from fine-grained and shaly to coarse and pebbly types, and also considerable variation when followed along the strike. Include a large proportion of fine-grained sericitic shaly sandstones, easily weathered and falling rapidly to pieces when exposed at the surface. With these are associated thin narrow bands of shale, sometimes hard and ferruginous, while similar hard, ferruginous shales resembling G$_2$, and alternating with softer red shales attain a considerable thickness at the base of the group (j^1). The Promise Reef Beds also include bands of coarse hard quartzites, one of which carries large scattered pebbles, sometimes exceeding three inches in diameter. A very persistent feature is the occurrence among the lower beds (see section) of the



Witpoortje Section: Lower Witwatersrand Formation.



Composite Section: Lower Witwatersrand Formation.

pebble-bed known as the Promise Reef (j^2), consisting of pebbles usually small, but ranging up to two inches in length, a large proportion consisting of fine-grained quartzite. Higher up in the series (about 120 feet, near Witpoortje) is the horizon characterised by the occasional occurrence of very large pebbles mentioned above (j^3), sometimes locally spoken of as the "Stable Reef" from a supposed correspondence with the reef of that name at Rietfontein. Associated with the "Stable Reef" is one known as the "Red Reef," similar in character to the Promise Reef, but more intermittent in character. The upper portion of the Promise Reef Beds includes a band of hard white quartzites, about 200 feet thick (j^4), which forms on the east side of the gorge a somewhat prominent ridge bearing a single beacon. The uppermost portion of the Promise Reef Beds (j^5) consists of a hard band of red slaty shale, which is often seen at the surface and which is succeeded by the large body of quartzites which forms the lower portion of the next group. (1850 feet, Hamburg; 1150 feet, Witpoortje.)

K1. *Lower Coronation Quartzite.*—Moderately hard, usually yellowish-white quartzite, mainly coarse-grained, with numerous very coarse grit bands, becoming in places small-pebbled "bankets." (820 feet, Hamburg; 400 feet, Witpoortje.)

K2. *Coronation Reef Quartzite.*—Outcrop usually intermittent. Coarse, gritty or pebbly bands usually frequent in lowest portion, and most marked a few inches from the base of the quartzite—"North Coronation Reef." (600 feet, Hamburg; 280 feet, Witpoortje; 360 feet, Barrett's, Rietfontein.)

L. *Coronation Shales.*—A series of flaggy, shaly beds passing up into highly ferruginous sandstones and shales. (Aggregate thickness 600 feet, Hamburg; 450 feet, Witpoortje.)

l^1 dirty greenish or reddish quartzitic flaggy and shaly beds and soft sandy shales, easily weathered, rarely outcropping, but well exposed near Witpoortje half-mile east of gorge; nearer the gorge associated with diabase.

l^3 *Coronation Shale proper* (West Rand Shale).—Highly ferruginous slaty shale, often with much magnetite, dark reddish purple, glistening, often banded and resembling the striped portion of the Hospital Hill Slate, for which it is often mistaken. About 85 feet thick. Passes down by hard red shale into dark red soft ferruginous sandstones, often containing widely scattered pebbles, sometimes of large size (l^2).

M_1. A series of soft, easily weathered, rather ferruginous, usually reddish-brown shaly sandstones and shales. (480 feet, Hamburg; 280 feet, Hamburg; 330 feet, Witpoortje.)

M_2. *Government Reef Shale.*—Foot-wall shale of Government Reef. Hard purplish-red slaty shale, lower portion inclined to sandy shales, middle portion usually softer with less tendency to appear at surface, upper portion harder, often slaty and more ferruginous. (450 feet, Hamburg; 330 feet, Witpoortje.)

M_3. Hard red ferruginous slaty shales. (120 feet, Hamburg); 80 feet, Witpoortje.)

N_1. *Lower Government Quartzite.*—(300 feet, Hamburg; 100 feet, Witpoortje.)

N_2. *Government Reef Quartzite.*—Hard, usually reddish quartzite, mainly rather coarse, with occasional fine-grained portions. Coarse gritty to pebbly bands often present, especially in lower portion. (500 feet, Hamburg; 165 feet, Witpoortje; 340 feet, Barrett's, Rietfontein.)

n^1. *Government Reef.*—Usually a well-defined "reef," forming the lowest portion of the Government Reef Quartzite and lying directly on the shale below. Thickness from two feet or more down to a single line of pebbles. Pebbles well rounded, mostly of white quartz up to two inches diameter where reef is thick, as at Witpoortje. Well developed from north of Florida to Witpoortje and beyond. Becomes much thinner eastwards from Florida, but still present east of Johannesburg.

n^2. *Government Reef Leader.*—In addition to the Government Reef proper, bands of pebbles of similar type occur at higher horizons in the Government Reef Quartzite, more especially in the lower portion. One of the more strongly developed and persistent of these is known as the Government Reef Leader. To the north of Florida and Roodepoort a well-developed pebble bed of this type occurs about 120 feet above the base of the quartzite, and is frequently of larger size than the Government Reef itself.

N_3. *Upper Government Quartzite.*—Moderately hard, rather massive, medium to rather coarse-grained quartzite, with occasional bands of grit. This quartzite usually forms the northern margin of the wide depression extending north of the Main Reef and is the highest of the big quartzites of the Lower Witwatersrand System which forms any conspicuous outcrop or surface feature. (500 feet, Hamburg; 400 feet, Witpoortje.)

O. Moderately hard, red, somewhat ferruginous slaty shale. (550 feet, Hamburg; 350 feet, Witpoortje.)

P. Rather soft, yellowish quartzitic sandstones. At Hamburg a small pebble band on foot. Outcrops incomplete and not prominent. (200 feet, Hamburg.)

Q. Moderately hard, red, slaty shale. (350 feet, Florida.)

R. Soft, rather coarse, yellowish, reddish or purplish quartzitic sandstones. Outcrops rare. (450 feet, Florida.)

S. Soft, sandy and shaly beds, mostly fine-grained.

T. Rather soft, red shales, passing up into fine-grained, soft sandstones, which grade in turn into the hard quartzites of the Red Bar.

Probable aggregate thickness O to T inclusive (Jeppe's Town Beds), 370 feet Florida and Hamburg; 2,000 feet Witpoortje.

SECTIONS.

Fig. 1.—*Section at Witpoortje about ⅓ mile east of the Gorge.*—The section extends from the base of the Hospital Hill Quartzites to the Main Reef at Grey's Mynpacht. The small letters refer to the description given. Dips: from H, to l^1 60°; l^1 to O, 60°; from O to T, 55°; Main Reef, 45°.

Fig. 2.—*Composite Section of the Lower Witwatersrand System on the Central Rand.*—For a description of the various beds indicated by letters see above. Dip throughout, 70°.

The section is made up of portions based upon data obtained from localities where such portions are best seen and most likely to show the normal sequence. The portion from H_3 to N_3 inclusive represents the actual section found along a line forming the northward continuation of the west boundary of Hamburg township, about two miles west of Florida. From G_2 to H_1 the section is based upon a comparison of sections presented to the north of Hamburg and Florida and at various points eastwards to Brixton and westwards to Witpoortje. From F down to the Granite the section is based upon data afforded by the northern suburbs of Johannesburg, more particularly Bellevue and Observatory Townships. No reliable data with regard to this portion of the section are obtainable in the Florida area. From O upwards to the Main Reef the section is based partly on the conditions seen about Hamburg and Florida, and partly on data afforded by comparison with corresponding portions of the section in other localities. The dip of 70° shown throughout the section is that prevailing along the Hamburg line, those portions of the section taken from other localities, or showing a different dip being represented in their true thicknesses on a dip of 70° in order to give a ready means of comparison of the various beds and of various portions of the section with one another by simple measurement.

Roberts Victor Diamonds.

The following is the output of diamonds from the Roberts Victor mine for the month of December: 22,577 loads yielded 6,634½ carats.

THE VAN RYN MINES' POSITION.

Statistics of Production Compared—Extensive Stope Filling—Effect of Mill Renovation—Labour Costs and Competition.

In his report on the operations of the Van Ryn Mines Estate for the financial year ended 30th June, 1911, Sir George Albu, the Managing Director, writes :—

Gold Production.—During the year under review an average of 130 stamps (out of 180 installed) ran for 320.169 days, and crushed 396.440 tons for an aggregate yield of 133.732.379 ozs. of fine gold, realising £566,765 15s. 1d., equivalent to a recovery of £1 8s. 7.113d. per ton milled. Working costs (including administration expenditure in Johannesburg and London) amounted to £304,425 3s. 1d. or 15s. 4.295d. per ton milled, thus leaving a working profit for the year of £262,340 12s., equal to 13s. 2.818d. per ton. A comparison of the foregoing figures with those for the previous financial year shows an increase in the ore milled during the year under review of 3.529 tons for additional revenue of £5.993 10s. 6d., and a small rise in the average recovery of .580d. per ton. On the other hand, the average working costs have increased by 7.871d. per ton, owing chiefly to the heavy cost of stope packing and filling and to the higher standard of native pay which it was found necessary to inaugurate in order to compete with the increased rates being offered by neighbouring mines.

Ore Reserves.—In spite of the shortage of native labour experienced during a great portion of the financial year, and the heavy additional mining work underground entailed by packing, the excellent position of the ore reserves has been fully maintained. At the 30th June last, the payable ore reserves as estimated by your Manager amounted to 1.655.910 tons of fully developed ore of an average assay value of 6.37 dwts. per ton (as compared with 1,590.711 tons of an average value of 6.39 dwts. per ton at 30th June, 1910), exclusive of 86.872 tons of partially developed ore of an average value of 5.76 dwts. per ton. Moreover, there are 39,821 tons of an average value of 6.49 dwts. per ton which have not been taken into the ore reserves at present in view of their proximity to the surface works, but the greater portion of which will undoubtedly eventually be mined. There are also 701,866 tons of fully and partially developed ore standing in the mine of value below the present assumed standard limit of payability of 4 dwts. per ton, and of this tonnage your Manager states that a considerable portion will probably prove to be payable on further development. The whole of these huge reserves stand in your Company's balance sheet free of cost, as the expense of their development has been charged out against profits earned in the past.

South Reef.—I have much pleasure in directing attention to the extremely encouraging results obtained from the necessarily limited exploratory work which it was possible to carry out during the latter part of the financial year on the South Reef in No. 3 Mine. Reference has been made in previous years to the unwatering of the old South Reef workings in the Nos. 2 and 4 Mines for the purpose of resampling and further prospecting. A considerable amount of crosscutting from the Main Reef workings was carried out in order to intersect the South Reef, but actual prospecting or development operations on the reef were of an insignificant extent owing to the prevailing scarcity of native labour. During the year, however, the outcrop of this reef was discovered in the No. 3 Mine under a younger formation, representing, as far as indications allow us to judge, an extension of the reef known as the Chimes Reef, and formerly worked with highly satisfactory results by the Company of that name. A prospecting shaft was sunk on the reef and has reached a depth of 51 feet, the average assay value over that distance being 25.1 dwts. over a stoping width of about 36 inches. This result may be regarded as a most encouraging indication, and sinking is being continued to 110 feet, from which point the first level will be driven East and West. I confidently anticipate that during the current financial year we shall be able to effect a considerable amount of development work on this new body of reef, which should form a very valuable addition to the existing sources of supply for the mill.

No. 3 Mine.—In my previous annual report I referred to the intersection (in September, 1910) of the Main Reef and Leaders in this hitherto unexplored and intact section of the property. Owing to the reason previously referred to, viz., insufficiency of native labour for special work of this nature, it was impracticable to open up this ground to the extent that had been anticipated, without prejudicing to some extent the development of Nos. 1, 2, 4 and 5 Mines in your property, but, as will be seen from the accompanying report of your Manager, an appreciable amount of work was effected. For some months after the intersection of the reef, driving disclosed a somewhat disturbed formation, but recently more settled ground has been met with, containing highly payable values. Given a fair supply of native labour, active and continuous development of this section of the property will be carried on. In view of the highly encouraging values disclosed on the South Reef, and the satisfactory results of the most recent driving on the Main Reef to which I have already referred, I have no hesitation in subscribing to the opinion given in your Manager's report that there is no reason why No. 3 Mine should not prove as valuable as the other sections of your property.

New Construction Work.—The renovation of the two mills has now been completed, and the effect of this work and of the installation of the heavier type of stamp is reflected in a very practical manner by the fact that with an average of only 130 stamps dropping throughout the year it was possible to crush a slightly higher aggregate tonnage than with the average of 145 stamps running during the previous year. The average duty per stamp per diem for the year under review was 9.665 tons, as compared with 7.76 tons for the year ended 30th June, 1910. Since the completion of the renovation of the batteries, however, the stamp duty has increased still further and very appreciably; for the month of July an average of 120 stamps crushed 37.500 tons of ore, equivalent to a duty per stamp per diem of 11.34 tons. Of the 180 stamps now erected on your property, 160 represent a heavier type installed during the late construction work, and the remaining 20 are of the old light pattern, which, in view of the high efficiency of the new stamps, it is unnecessary to reconstruct, and they will probably be dismantled. Shareholders will remember that the necessity to undertake this work arose some two years ago, and 20 new stamps were erected in order to enable the renovation to be carried out in sections of 20 stamps at a time without interfering with the current crushing capacity. The condition of the mills, however, was such that anything in the nature of " patching up " would have been false economy, and practically a complete renewal of the mills has therefore been accomplished. The amount of capital expenditure involved was naturally much larger than was anticipated, but we have the satisfaction of knowing that we now have practically a new reduction plant of 160 heavy stamps with a crushing capacity of from 10 to 11 tons of ore per stamp per day, or up to 50.000 tons per month. The cyanide works were simultaneously extended by the addition of sands tanks, and a new central slimes plant erected, capable of treating about 38.000 to 40,000 tons per month, which is the limit of present production requirements. If at any future time it is considered advisable to still further increase the output of ore the additional work required will be limited to the adding of a few more sands and slimes tanks. The boiler plant at both mills has been considerably augmented, and a new pump station at No. 2 Shaft has been constructed and powerful pumping plant installed. The tailings wheel at the West Mill has been completely rebuilt, and numerous other details of plant and machinery have been installed. Special attention has been paid to the strengthening and re-equipment of the shafts, which are now in an excellent condition. A new steel head-gear and hoisting engines are being provided at the No. 2 Shaft, primarily, to meet the requirements of this section itself, by reason of the extension of the Shaft into the lower levels and the increase generally of the scope of work in that portion of the mine, and, secondly, in order to cope with the ore to be opened up in the No. 3 Mine through the No. 2 Mine workings, which will obviate the necessity for a new shaft to exploit the former. The new equipment at the No. 2 Shaft will, as far as it is possible to see at present, represent the last of the heavy capital expenditure which has been necessary during the past few years to bring your plant up to the conditon of completeness and efficiency in which, with the above exception, it exists to-day.

General.—The returns from the mine for the first few months of this year showed a falling off from the high level of profits which had been previously attained. This temporary set back was due partly to the heavy charges to working costs on account of filling and packing the old worked-out stopes (in order to ensure safe working conditions), and partly also to the fact that several stopes which were contributing largely to the mill declined in value for the time being. On the whole, however, mining operations have continued to demonstrate the satisfactory feature referred to in my previous annual report—that the ore stoped from the respective sections of the property generally yields a higher value than that indicated by the development assays on which the ore reserves are based. The improved extraction obtained in the previous financial year as the result of the extensive additions to the sands and slimes plants has been more than maintained during the past year, having increased by 1.9 per cent. in the case of sands and 3.7 per cent. in the case of slimes, with a consequent further saving of several thousands of pounds. As will be inferred from the general tenor of the foregoing remarks, I consider that the mine is in a highly satisfactory position for returning excellent results which, but for the higher rates of native pay which the suicidal competition between the mining companies for native labour has brought about, should to-day and for the future be better than ever. I still venture to hope, however, that this senseless rivalry will be eliminated by a mutual and common sense agreement between the controllers of this mining industry to standardise both the cost of labour recruiting in open districts, and the rates of pay to native labourers.

Analytical Chemist.—SITUATION WANTED.

Some years practical experience in Government Laboratory in Cape Town. Advanced in Assaying and General Analytical Chemistry, Food and Water Analysis Also possesses good knowledge of Microscopy.—Address: D. C., c/o "S.A. Mining Journal," Box 418, Johannesburg.

MESSINA COPPER PRODUCTION AND PROSPECTS.

Ore Reserves—Preparing the Mine for Railway Communication—Coal Reserves—Points from the Consulting Engineer's Report.

Mr. T. M. Calderwood, M.I.M.M., Consulting Engineer, in the course of his annual report on the Messina Mine, states :—The Company's property holding comprises 22,432 acres. The Messina Copper Mine is situated on the Government Farm Berkenrode, Zoutpansberg District, Northern Transvaal. The other properties are in the same district, and adjacent to Berkenrode. Two hundred coal claims, each 150 feet by 400 feet, were acquired during the year, on the coal-bearing area, about 15 miles south-west of Messina. These claims have been pegged out, and are held under the Base Metal Laws.

On Capital Expenditure £4,247 were expended at the Mine during the year.

Shaft Sinking.—In accordance with the scheme of operations outlined in last year's annual report for the development of the mine at depth, in order to place a large ore tonnage in reserve, the sinking of main shaft (No. 4) with three compartments, was carried out as rapidly as possible. 579 feet of sinking was accomplished, and stations opened at 4th, 6th and 8th levels. The expenditure on this work, including timbering, amounted to £9,652 5s. 4d., equal to £16 13s. 5d. per foot. The shaft has now reached a total depth of 818 feet from surface. The 8th level has been opened at a depth of 814 feet. Sinking has been temporarily suspended, pending development of the mine to this depth, in accordance with the plan laid down. The recommendations in favour of sinking No. 4 shaft, having special reference to the economical working of the lodes in depth and the probable extension and pitch of the ore shoots, have been fully justified. It was estimated that North Lode would be cut at about 700 feet in depth, and that 8th level would be reached by the month of May. This was successfully accomplished, with results quite up to expectations as regards widths and values of ore bodies so far disclosed, and the cost and speed of sinking to 8th level, came well within the estimates covering the work.

Shaft Values.—The hanging wall of North Lode was cut in shaft at a depth of 660 feet, and further sinking to a depth of 727 feet, exposed rich copper glance (chalcocite), equal in grade to similar ore found in the upper levels of the mine. The assay values at the points mentioned were 36.9 per cent. and 54.3 per cent. copper respectively, for a width of 24 inches exposed. At a depth of 764 feet the lode was exposed as a strong well-defined ore body, and from this point down to 780 feet, the average assay value was 30 per cent. copper for a width of 72 inches. From 780 feet to bottom of shaft at 818 feet, sinking was continued in solid lode, showing massive hornite and chalcopyrite occurring across the full shaft section, having a width of 7 feet by a length of 14 feet. The average assay value for the last 54 feet sunk was 22 per cent. copper for an average sample width of 72 inches. In the station cut at 8th level the lode is 27 feet wide, and the average assay value 17 per cent. copper over this width. The occurrence of massive mineralisation at this depth indicates that the Bonanza Ore Shoot, the best ore carrier in the upper levels, is continuous in depth, and the intervening section of lode to be developed between 4th and 8th levels can safely be reckoned upon to maintain average width and value. There is appreciable evidence that this important ore shoot will be found persistent to a much greater depth. It is impossible to state at what depth a change in the grade of ore may be expected, as at present there are no indications to suggest any alteration of the mineralisation.

Development.—The total development accomplished for the year (exclusive of shaft sinking) was 2,000 feet. The expenditure on this work amounted to £9.061 2s. 8d., equal to £4 10s. 4d. per foot. The sum of £4 643 5s. was credited to development account for ore redeemed, at a uniform figure of 5s. per ton mined during the year. The following is a summary of the work :—Driving, 1,160 feet ; cross cutting, 237 feet ; sinking winzes, 296 feet ; raising, 141 feet ; station cutting, 171 feet ; total 2.005 feet. Fully one half of this footage was on the line of lode. About 650 feet were sampled and gave an average assay value of 9.6 per cent. copper, over an average width of 60 inches. The grand total of development work throughout the mine, including shafts, amounts to 19,533 feet. During the year, development was carried on chiefly by hand labour, according to the number of natives available over and above requirements for shaft sinking and ore stoping. The Compressor supplied air for driving two machine drills and small pump. A 10-drill steam driven Reidler Air Compressor is in course of erection and will greatly assist the speed of development. Rapid progress will be made and thereby place large ore reserves in readiness for stoping, when railway reaches the mine.

The Lodes and Assay values.—Systematic sampling of the development drives and winzes, where copper values occur, shows that an average grade of 10 per cent. copper has been maintained during the year. Notwithstanding the variation in widths and values of the ore bodies, the average assay value has been calculated over an average width of 60 in.

Ore Reserves.—The estimated ore reserves at 30th June, blocked out within the developed sections, amount to approximately 102,000 tons, containing an average assay value of 10 per cent. copper. The assay plan reveals a very satisfactory position as regards values for the ore developed. The stopes throughout the mine have proved that the ore shoots are continuous from level to level. The total cost of Mine Development at 30th June amounts to £26,602 5s. 1d., equal to an average cost of 5s. 2d. per ton for ore reserves. Estimates of tonnage and values have so far been fully realised when ground has actually been mined. The estimates of probable ore referred to in previous reports, have been verified by ore exposed as development proceeded. For the purpose of calculations, an estimate of 60,000 tons of ore per level has been allowed for future development, from 4th to 8th Levels, 100 feet apart, based on results obtained by actual tonnage mined and ore exposed in the upper levels. The position of the probable ore has been greatly strengthened by the disclosures in No. 4 Shaft, and even allowing for the more or less erratic nature of the ore occurrences, a total tonnage of 240,000 tons of probable ore, from 4th to 8th Levels, may be regarded as conservative. The practical problem of Mine Development has been advanced an important step in connection with the scheme of operations referred to in previous year's Annual Report and now in progress. The present position of the mine may be considered as most satisfactory, and future development can be looked forward to with every confidence. Stoping has been confined to such sections of the mine whereby the general grade could be maintained for milling operations. As it is now the intention to reduce output and concentrate all underground operations on development, the mill will only treat ore obtained from progressive driving and winzing. The Ore Reserves at date will therefore remain intact, and the tonnage will rapidly increase from now on. Every effort will be made to place the mine in readiness for railway communication, in order to deal with the proposed output on the basis of previous annual report. The grade to be treated in future will be fixed according to conditions depending upon the scale and method of treatment and other factors governing the production of copper, on the most economical basis for profitable working. The position of the ore reserves and probable ore is summarised as follows :—North and Middle Lodes : Ore Reserves above 4th level and at 8th Level (No. 4 Shaft), 102,000 tons : probable ore above 4th level, 25,000 tons : probable ore from 4th and 8th levels, 240,000 tons. South Lode : Probable ore to 4th level (No. 1 and No. 3 shafts) 63,000 tons ; total, 430,000 tons. With railway facilities established between Messina and Delagoa Bay, the above tonnage when fully developed and treated by concentration on a basis of 12,000 tons per month, and the market price of standard copper taken at £55 per ton, it is estimated that a total profit of approximately £600,000 will be realised.

SUMMARY OF PRODUCTION.

	Tons produced.	Average assay per cent. Copper.	Copper contents. Tons (2,060 lbs.)
Concentrates	2.503.39	50.8	1.271.72
Middlings	1,809.00	13.8	249.64
Total	4,312.39	35.3	1,521.36

The average grade of ore treated was 10.95 per cent. copper. The total production for previous year amounted to 5.738.33 tons, having an average assay value of 31.2 per cent. copper. The tailings and slimes produced, containing about 2.75 per cent. copper, have been accumulated for future re-treatment. During the stoppage of mill, the ore mined was hand-sorted and hand-jigged, thereby maintaining an output. The loss of profit for the period was covered by insurance.

Cost of Production.—The total expenditure at mine, for mining and treatment of 18.573 tons of ore was £26,571 8s. 9d. The Johannesburg office charges amounted to £3,970 11s. The average cost per ton of ore treated was as follows :—Mining, 15s. 10d., dump ore 1s. 3d., milling 6s. 6d., development redemption 5s., cost at mine £1 8s. 7d., Johannesburg charges 4s. 3d., total £1 12s. 10d. The transport and shipping charges on 2.503.39 tons of 50.8 per cent. copper concentrates produced, amounted to £14,296 7s. 4d.

Shipments.—During the year 2601.84 tons of concentrates were despatched from mine. The stock of concentrates on hand at 30th June was 38.55 tons.

Middlings and Tailings.—The stock of middlings on hand at 30th June amounted to about 6,000 tons, having an average assay value of about 14 per cent. copper. The tailings and slimes accumulated amount to approximately 50,000 tons, containing about 3 per cent. copper. The future treatment and recovery of copper from these products present no metallurgical difficulties, the ores being practically self-fluxing.

Total Production.—The total ore mined and concentrates produced for shipment since start of operations to 30th June, 1910, has been as follows :—Ore mined, 65,788 tons ; concentrates produced, 9,699.2 tons ; average assay per cent. copper, 53.1. The average grade of ore treated during the above period has been about 12 per cent. copper. The above production of concentrates has realised a gross valu of approximately £250,000.

Railway.—In April last an agreement was entered into between the South African Railway Administration and the Messina Company, for the construction by the Union Government of a railway line to the mine, as an alternative to the original scheme sanctioned by the Transvaal Parliament. The new agreement provides for connection with the Selati Railway at Tzaneen, now under construction, and Bandolier Kop Railway, now completed from Pietersburg, and a further extension from Bandolier Kop to Messina, thereby giving direct railway communication from Delagoa Bay and Johannesburg to Messina. The approximate length of new construction under this agreement will be 148 miles, at an estimated cost, exclusive of rolling stock, of £750,000; average cost per mile, £5,067. The distance from Tzaneen to Messina is approximately 165 miles, made up as follows:—Tzaneen to a point on the Pietersburg-Bandolier Kop line, near Zoekmakaar, on the Dwaars River, 55 miles; Zoekmakaar to Bandolier Kop (existing line) 17 miles; Bandolier Kop to Messina, via Zand River Poort, 93 miles; total, 165 miles. The agreement provides that the Company will guarantee to Government for a term of 10 years, the payment of any loss that may accrue on the working of the line, the amount payable in any one year not to exceed a sum equal to 4½ per cent. upon the capital cost of the line, which, including rolling stock, surveys, etc., is limited to £792,000. It is expected that the line will, soon after it is opened, pay working expenses and also contribute towards the interest charges, as there is every prospect of considerable agricultural, pastoral and mineral development in the districts which this line will serve. In addition the large number of natives within the area served by this line who will make use of the railway, in travelling to and from the Rand, will add materially to the revenue. The railway line from Pietersburg to Bandolier Kop is now open for traffic, thereby placing the mine within a distance of 75 miles from rail-head. Construction work is in progress beyond Bandolier Kop, and it is expected this section of the line to Messina will be completed within two years. The line from Messina will no doubt be linked up with the Rhodesia railway system, which comes as far south as West Nicholson, about 120 miles from Messina.

Coal.—The coal discovered on the Government Farm Rotterdam, about 15 miles S.W. of Messina, has been energetically opened up and a large coal-bearing area has now been located and pegged, in which the Company have acquired a substantial interest. Analyses of samples are so far satisfactory and encourage the belief that workable coal of fair quality can be obtained from these fields. A practical steaming test has been carried out at Messina, with satisfactory results, considering the class of coal supplied, as compared with the consumption of wood. The importance of this class of fuel in connection with operations in the Messina district, for steaming and smelting purposes in the future, cannot be over-estimated.

ACTIVITY ON BARBERTON MINES.

The Sheba Revival—Several Small Mines Make Profitable Returns.

AMONG the chief features of the year in the Barberton district must be reckoned the return of the Sheba into the list of dividend-paying companies, and the gradual and constant increase of the monthly output, placing it easily first of the producing mines of the Barberton district. The efforts of the late manager kept the old company on its feet amidst continuous rumours of closing down, and under the present management it has entirely recovered itself with every promise of prolonged prosperity. The Sheba affords not only a striking example of the results of pertinacity applied to mining on quartz reefs, but of the uncertainty of doleful prophecies in respect to local propositions. In the same neighbourhood we have the successful venture of the Victory Hill, which is producing satisfactorily, and the little spoken of syndicate known as the Barberton Devenish Syndicate which has been making excellent profits for its owners. The New United Reefs (Joe's Luck) has been giving a payable output too, and it is expected that the Ulundi, which has recently started up after several years development, will have a creditable record to present in the course of the present year. On the Eagle's Nest, which has lain idle for many years, development on payable values has reached a stage where we may expect the stamps to be dropped before the year is much older. Coming nearer town we have a private venture in the North Star, which, after experiencing considerable difficulty with ore of a refractory nature, has in the last few months mastered the trouble, and is now showing satisfactory monthly profits to its owner. Altogether this section of the fields has shown a remarkable advance and improvement in productivity and payability, and it has besides been the scene of extensive prospecting operations carried on at Fairview, and on the Florence and George blocks. The results are reported to be so promising as to warrant the expectation of the laying down of a permanent plant at any time. The French Bobs Company has supplied a crop of rumours of varying tenor from time to time, but as it does not publish returns we are unable to say anything definite either as to its position or prospects. It is satisfactory to know that it is continuing its production, and we hope it will not be long till it comes into the front rank of local companies. The Imperial, a neighbouring property, has passed through a trying period, but we understand it is now giving every satisfaction to its owners and doing well. On Moodie's, the principal producer is the Fortuna, which must be the envy of its former owners and former possible tributors. Being in the hands of private owners its returns are not available, but it is reported to be the best paying property on the fields. The Agnes, the Tiger Trap, and the Alpine are all doing well; New Abbotts is a producing property with good possibilities, and among other working properties on a small scale are the Lydlinch, the Walhalla, and the Golden Shebang. The Great Scot, which has been the subject of negotiations, has not yet been taken up, but from what we hear of this property, it offers great attraction for putting capital into it for development and equipment. The Daisy, another small block privately held, is opening up very satisfactorily as development proceeds. The Rosetta, which has been a regular producer during the year, is likely to fall out of the list very soon according to report, unless the prospects improve quickly. Out in the valley we have the Worcester keeping on a steady dividend-paying basis, twenty per cent. being the return to the shareholders for the twelve months, and the Consort continuing as a good profitable tributing proposition. The Clutha, we expect to hear before long, will be giving a good account of itself, as we understand it to be on the eve of surmounting the many difficulties that have hitherto confronted the management. Among smaller workers, attention is being directed again to the Madeline and the Bullion Hill, and operations will probably be resumed on the Brian Boru, where work was suspended some months ago owing to lack of capital. Work has also been carried on in a small way on various properties in different parts of the field, and taking things all round the mining position and outlook is really healthy. The success which is being achieved on many properties that have been previously turned down should be sufficient to warn expert engineers from airily condemning Barberton properties in the future, for in spite of the superior wisdom assumed by detractors, the district is steadily making good its claim to be reckoned as an important gold-producing area. Though advance is not being made with special rapidity, there is enough to justify us in beginning the year 1912 with a cheerful outlook on local mining prospects.—*Goldfields News.*

Spitzkop Farm Gold Co.

The directors report for the twelve months ended June 3, 1911, that the revenue account shows a debit balance of £384, as compared with the credit balance of £137 in the previous year, when the accounts included £500 received under the option. Mr. E. F. Bourke, of Pretoria, decided not to exercise the option which he held over the property. The board have recently had several offers to lease and work the property on tribute, and have at present under consideration a proposition of that kind for a part of the property, which they trust to be able to carry through, and which, it is hoped, will yield from royalties a sufficient income to show an annual surplus.

THE OUTLOOK FOR TANGANYIKA COPPER.

Many Difficulties Encountered—Enormous Cost of Coke—Initial Losson Smelting—Mr. Frecheville's Estimates— Financial Position.

Among the points in Mr. Robert Williams' interesting speech at the recent meeting of the Tanganyika Concessions were the enormous difficulties encountered by the engineers, and the satisfactory progress achieved. It is almost impossible for anyone to conceive the drawbacks that faced the pioneers, technical, financial, and labour, to say nothing of the doubts cast upon the possibility of ever producing copper at a profit. What has been achieved in the relatively short period of a decade must be read in Mr. Williams's speech to be thoroughly appreciated. The fortunes of the Tanganyika Concessions do not depend upon one or two mines; more than 150 are known to exist. In the language of Mr. Williams, the whole country is impregnated with copper. Efforts naturally must be confined to one or two mines at the outset, and when these are quite successful others can be opened. "Successful" here is used in a relative sense. From one point of view success is already achieved, for copper is being produced and shipped. From two mines alone about £150,000 worth of the metal has been shipped during the last six or seven months, say, 3,000 tons. No further proof is needed that copper can be produced. Mr. Williams told the whole truth concerning the costs of production—a matter that has so greatly exercised the minds of the shareholders and the market. Expenses have ruled at a high figure; in fact, a loss has been made. As was quite rightly pointed out, however, the initial working of a smelter where there was no experience to guide the engineers, and where experiments had to be made, must not in any case be regarded as the level at which costs will rule when operations are on a sound basis. In the case of a gold mine, costs in the early stages are never taken as a standard; it is the same with a smelting proposition, especially when the matter of flux has to be considered, and when coke has to be conveyed for thousands of miles. A vital point is cheap fuel, and this is the factor in the working now receiving the earnest attention of the management. Coke has proved more expensive than was originally estimated; in fact, it represents 70 per cent. of the total cost of production. Prolonged negotiations with the Wankie Colliery Company have taken place, and it is hoped that a satisfactory arrangement in regard to coke has now been made. Of the cost of £56 per ton of copper, no less than £39 was paid for coke, £17 being for other expenses. With Wankies coke at £5 per ton at the smelter, running with one furnace, it is estimated that the cost of copper will not exceed £35 per ton on trucks at the works and £44 per ton landed on the European markets. It has to be borne in mind that the one furnace working has had to bear the cost of the present staff, which is quite sufficient to produce three times the amount of copper. The actual metallurgical results to date have been highly successful, showing a recovery of 87 per cent. of the total copper in the ore in bar copper, 2½ per cent. extracted in flue dust, and 10½ per cent. lost in slags. Mr. Gibb had calculated on the smelting ore at the Star of the Congo Mine yielding from 15 per cent. to 18 per cent. copper, and that it would be necessary to smelt seven tons of ore to get one ton of copper. Each ton of ore requires 4 cwt. of European coke, costing 10s. per hundredweight, or 5 cwt. of Wankies coke, costing 5s. per hundredweight. Hitherto Mr. Frecheville's figures in connection with the copper deposits have been carefully guarded. His report, in fact, has never seen the light of day, so far as shareholders are concerned. The following comparison, therefore, is interesting, and it shows that the directors are less conservative than formerly about stating Mr. Frecheville's views. Three experts have reported upon the different deposits, and a comparison may here be given of their estimates of ore proved:—

Kambove.

	Tons of Ore.	Copper. p.c.	Copper. Total Tons.
Mr. Frechville	1,800,000	12	215,000
Mr. Atherton	2,500,000	14	350,000
Mr. Gibb	3,000,000	12	360,000

Star of the Congo.

	Tons of Ore.	Copper. p.c.	Copper. Total Tons.
Mr. Frecheville	435,000	14 and 9	50,000
Mr. Atherton	1,500,000	11	165,000
Mr. Gibb	1,200,000	15 and 6	106,000

Mr. Atherton's Other Estimates.

	Tons of Ore.	Copper. p.c.	Copper. Total Tons.
Fungurume	1,500,000	7	112,000
Kwatabala	1,150,000	7	85,500
Likasye	1,000,000	12	120,000
Kabaleta	1,000,000	7	75.000
Dikurwe	800,000	12	96,000
Musonoi	600,000	9½	57,000
Kolwezi	450,000	13	60,000
Kakanda	350,000	9	30,000

These figures refer only to ore found to exist by the shafts and underground work that has been done. Mr. Frecheville, it will be seen has made the most conservative report.

Finance was not touched upon to so great an extent as many shareholders would doubtless have liked, but the remarks that were made were satisfactory. The Chairman stated that "the resources which are at the disposal of the Union Miniere and of your company, through their intimate relations with powerful financial houses, both here and on the Continent, will be amply sufficient to enable them to carry this great enterprise to the period of production and profit." The coupon on the debentures will be easily met from the present cash resources of the company. Mr. Leyland's claim has been reduced by £39,500, leaving £84,500, secured by a second debenture at 5½ per cent., payable by four equal annual instalments, the first due in November, 1912. Mr. Williams foreshadowed the flotation of subsidary companies to open up the copper belt, proposals having been made to utilise the Lufira waterfalls to smelt copper by electricity. Two important factors in connection with the Tanganyika Concessions are its railway assets, the Rhodesia Katanga Junction line, and the Benguella undertaking, each of which is earning a surplus over its working expenses, and the coal deposits that have been located. Within the week a contract was signed for the construction of and financing the next 100 miles section of the Benguella Railway. Development is necessary in each case; already the railways are creating traffic, and the coal should help to reduce the price of fuel in the future. Labour is by no means plentiful at the mines, but no difficulty is anticipated in obtaining it when necessary.

High Mining Salaries

EARNED by those holding Mining Certificates as Mine Managers, Foremen, Surveyors, Mechanical Engineers and Engine Drivers. Private Individual Tuition and Correspondence Lessons where personal tuition is impossible.—E. J. MOYNIHAN, Consulting Engineer, 10, Anglo-Austrian Buildings; Box 2061.

Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

Anglo-German Tins, Limtied.

To the Editor, *South African Mining Journal.*

Sir,—At a meeting of my directors held on Saturday last, the attention of the Board was drawn to the fact that the wording of an article which recently appeared in a Swakopmund newspaper might be interpreted to reflect on this Company's title to a portion of the twenty-two claims acquired by them in German South-West Africa. For the information of shareholders and interested parties, my directors desire it made known that transfer of the twenty-two claims was duly received by this Company on the 25th November, 1911, at the Mining Office, Windhuk, and that this Company is to-day the registered owner of the claims. I am further directed to state that Dr. E. Jorissen, Consulting Engineer, has just returned from a visit to the Company's property, and attached hereto are extracts from his report dated the 29th December, 1911. The full text of the report lies at the office of the Company, and is available for perusal by shareholders during business hours.—I am, etc.

W. PARKER-VALE, Secretary.

Johannesburg, 3rd January, 1912.

The Hardinge Mill.

To the Editor, *South African Mining Journal.*

Sir,—We do not wish to encumber you with our desire to put forward the Hardinge Mill, but the enclosed cut will show the reason and the principle involved in the Mill, and why it is so radically different from the ordinary ball mill. You will note from operating the small model which we have sent you that the selective action of size is carried out as shown in the sheet on "Thousands of Stamps," which we enclose you herewith. The idea of always using the heavy stamp shown upon the large particle indicated, also the same size stamp upon the smaller particle, is radically wrong. Because the stamp has been so long used is really no reason why it should continue to be used as a fine crusher. The principle of using coarse rolls for coarse crushing, and finer rolls for fine crushing, is a right mechanical principle, but it should not be considered that the principle of a heavy stamp upon the same size of material is correct simply because there has been no means or method of mechanically varying the size of stamps to the size of ore undergoing reduction. The ball mill is, in the opinion of the writer, a better principle of crushing than the stamp. Heretofore it has been subject to such an exceedingly large screening area, subject to so many repairs through this screening area, that, mechanically, its construction is defective. In the case of the Conical Mills no screens whatever are used or are needed. The straight cylindrical ball mill, built by some manufacturers on the same lines and principle as the pebble mill, is subject to the trouble of not being selective, and the heavy balls and heavy weight and equal peripheral speed are not adjustable, as is the case in the conical mill.—Yours, etc.,

HARDINGE CONICAL MILL CO.,
Per H. W. Hardinge.

New York, November 29, 1911.

The Farm "London."

To the Editor, *South African Mining Journal.*

Sir,—My attention has been drawn to pages 564 and 566 of your issue of the 23rd December, and page 592 of the 30th December, in which you imply that the advertisement appearing in your journal of the 9th December, offering owner's reserve claims on the farm "London" is misleading or incorrect. You infer that it might lead one to suppose that the engineer who reported stated that *four-fifths* of the farm "London" (7,234 morgen) is covered by diamondiferous gravel of *proved* exceptional richness—a tall job indeed to prove the value of 15,000 acres in a few months! All quotations from the engineer's report in my proof were given in inverted commas, which I notice, however, you omitted in connection with the words "four-fifths." The advertisement offered claims in the owner's reserve, an area of 150 morgen only, and, though the engineer's exact words on the results obtained were: "I consider this result right good," he was not quoted.—Yours, etc.,

FRANK T. RICHARDS,
Selling Agent for the London Diamond & Estate Co., Ltd.

[It appears that owing to the omission of the quotation marks a misunderstanding did occur in this matter.—Ed. *S.A.M.J.*]

Nyassa Company.

The directors report for the year ended December 31 last that, as compared with the year 1909, the Customs House revenue (£22,518) shows a decrease of £2,932, and the hut-tax revenue (£21,535) an increase of £5,337. The general receipts of the territories increased by £6,144, to £63,602. During the year seven new military posts were established, in addition to the new Concelho of Mucojo. During the year fourteen further sub-concessions of land were made in the terms of the company's regulations, principally for agricultural purposes. With respect to sub-concessions of greater importance granted during the year 1910, contracts were entered into with Messrs. White and Schultz for the mining of graphite, and with Messrs. Arndt and Cohn for the extraction of mangrove bark. The undertaking of the greatest importance is, however, the Nyassa Rubber Company, Ltd., the successful inauguration of which was mentioned in a previous report.

Louis Moore G.M. Co.

The annual general meeting of the Louis Moore Proprietary Mines, was held on the 28th inst. Mr. Herbert Briggs presided. The directors' reported that the railway had already been extended from Pietersburg to Bandolier Kop, which was about 65 miles from the mine, and that the Selati railway was making good progress, and it was hoped eventually that it would be within 20 miles or less of the mine; also that the Union Government was continuing, free to the company, the coach and mail service to the mine, making that district the distributing centre for mails for that part of the country. The policy recommended for the present was, therefore, to conserve the resources of the company in order to keep the property intact until more working capital could be raised. The Chairman said the position of the company was improving as the railway advanced. The directors were keeping down expenses. The directors were keeping in view the necessity of providing further working capital, and he had no fear for the future.

Rhodesian Section.

LATEST MINING NEWS.

Some High Grade Mines—Coal and Base Metal Outputs—The Hay Company's New Plant—The Hay Report—The Mazoe Railway—Shamva Developments.

Although there have not recently been recorded in the output analysis sheets of the Rhodesia Chamber of Mines such high returns as there used to be, the November list contains the following particulars of half-a-dozen small mines where the yield per ton was exceptionally high:—

	Stamps.	Tons Milled.	Output. £
Mickey (Mazoe)	2	111	667
Mont d'Or (Salisbury) ...	—	23	379
Amaroso (Hartley)	5	289	890
Goodsman (Hartley) ...	2	142	656
Duke No. 3 (Hartley) ...	3	38	139
New Eclipse	2	517	1,354

The Mont d'Or's return, which works out at over £16 per ton, was, it is understood, obtained by dollying.

* * * *

The coal output of Rhodesia for the month of November amounted to 19,038 tons, which were sold for £8,258. Chrome iron amounting to 3,024 tons was sold for £6,750. Lead (50·10 tons) for £681. Silver (15,084 ounces) for £1,578. The total mineral output of Rhodesia for November was valued at £231,040, as against £246,682 in October. The chief cause of the decrease is the reduced return of chrome iron, the declaration for November being only 3,054 tons, as compared with 7,560 tons in October. It is eminently satisfactory to note that whereas the output of minerals other than gold for the first eleven months of 1909 was £184,414, for the corresponding period of 1910 it was £222,929, and for 1911 £228,571.

* * * *

After numerous delays, the new machinery of the Hay mine has at last been started. When reorganisation of the company's plant was first considered, it was anticipated that the new machinery would be got to work in September last, but there have been many disappointments, and only recently have the new stamps been dropped. The plant consists of 10 head of stamps, each of 1,250 lbs. weight, and the capacity is about 100 tons per diem. A high extraction is aimed at, and it may be remarked that the process adopted is practically new to Rhodesia. The process is "all-sliming." The ore is crushed in the presence of cyanide solution, and after passing over the amalgamating plates the ore is elevated by two Frenier pumps to a separating cone. From here the overflow passes to two patent Dorr slimes thickeners, such as are in use at the City and Suburban gold mine. The coarse inflow is passed through a 16 feet tube mill and then returned to the cone. On leaving the Dorr thickener the slimed product contains an average of about 50 per cent. moisture. The product is next gravitated to a mechanical agitator, and is pumped thence to the slimes plant, which consists of a vacuum filter containing 18 leaves. The Hay ore is free milling, and the working of this plant will be watched with very great interest.

* * * *

The Hay G.M. Company has just issued its first report and balance sheet, covering the period June, 1910, to June 30th, 1911. The company took over on formation an accumulation of tailings, by the treatment of which it has been able to earn a profit of £10,525 in its first year. The tailings plant has now been remodelled and a complete reduction plant erected. From now on regular returns from the mine are expected. The reports of the engineer, Mr. Gordon F. Dickson, bring the account of the development up to the end of September. The chief work has been the sinking of the new main shaft to a depth of 250 feet, which was reached in August, after which a crosscut was driven 110 feet at the 250 feet level, and had then a further 87 feet to be driven to cut the reef. A winze has been put down from the 150 feet level to a depth of 218 feet 6 inches, following the ore-body to the 250 feet level; for the last 88 feet, the reef had an average value of 10·3 dwts. for a width of 21 inches. At the 150 feet level the ore-shoot has been proved to extend 450 feet, but there is some reason to believe that a further shoot may be picked up to the east. On the 250 feet level driving east and west has been started from the winze in anticipation of the crosscut from the main shaft making connection. The west drive for 17 feet assayed over 8·3 dwts. over 43 inches, and the east drive for 45 feet assayed 15·9 dwts. over 41 inches. The ore reserves at June 30 were estimated at 30,589 tons, of an average value of 10·13 dwts. above the 150 feet level. The subsequent work has already added about 1,900 tons, estimated at 12 dwts. below the 150 feet level, bringing the total reserves up to 32,489 tons at 10·24 dwts.

* * * *

The third ordinary general meeting of the Blinkwater Railway Company, Ltd., was held in London in mail week. Mr. Rochefort Maguire presided, and in moving the adoption of the report, explained that the company's operations were no longer confined to the Umvuma line. At the present time the Mazoe line was under construction. This line branched off from the Mashonaland Railway's Lomagunda branch at the 13-mile peg, and the railhead had already reached the terminus of the first section—the Jumbo mine—which he hoped would be opened for traffic and worked by the Mashonaland Railway at an early date. The contract price of this extension was £58,754; there were, however, some further items of expenditure, but the total cost could not exceed £63,000. Their total expenditure on capital account would absorb about £170,000 of the authorised capital of £200,000, leaving a balance of 30,000 shares unissued. But it was the board's intention to extend the line beyond the Jumbo to the Mazoe River and on to the Kimberley and Shamva mines, a distance of approximately fifty miles. They had thought it advisable to keep the unissued shares in hand, and they contemplated an issue of £150,000 debentures. These debentures would be subscribed for at par by the Beit Railway Trustees, and would provide the estimated cost of the construction of the extension. They had insisted that the mining companies which would primarily benefit by the construction of the line should give some financial support to its construction, and arrangements were being made that would, he thought, be considered satisfactory. It was proposed that the Shamva mines should guarantee for a period of ten years to make up the net earnings of the line to £7,500 per annum, which would be 5 per cent. upon the estimated cost of construction, and this guarantee by the Shamva mines would be backed by the Charterland Company and the Goldfields Rhodesian Development Company, Ltd.

* * * *

The following cable was despatched on the 20th ultimo from Bulawayo to the London office of the Shamva Mines, Ltd.:—"No. 2 level: No. 3 crosscut from No. 4 adit, width of reef so far exposed 205 feet, of an average assay

FOR SALE.

About 750 **Steel Rails (New)**, with Fishplates, 24 lb. to the yard, 18 ft in length. For further particulars apply KATZ & RABINOWITZ, Metal Merchants, Box 184, East London.

PROSPECTORS' REFERENCE COLLECTION
OF
MINERALS AND ROCKS.

200 Specimens in **Deal Box, 57/-;** ditto **Mahogany Box 63/-;** ditto **Japanned Tin Case, 73/-.**

RUSSELL & SHAW, 11, John Street, Theobald's Road, LONDON, W.C.

FACTS AND FIGURES

of over 2,500 Securities quoted on the London Stock Exchange are given in the

"INVESTOR'S BLUE BOOK," 1912 EDITION

Bankers, Brokers and Investors say that it is indispensable to them. It is a book which gives you the **Essential Facts** and **expresses opinions.** It is not a mass of colourless information of no practical value. It contains more real information regarding the securities with which it deals than any other book of its kind ever published. Its facts and figures have been **Officially Checked**; its opinions are unprejudiced and **Absolutely Independent**. It answers many of the questions you are from time to time asking in regard to financial affairs. It is published at 3s. 6d. by the "Investor's Chronicle," Tower Chambers, London Wall, London, England.

Explanatory Pamphlet on Application.

CYANIDE of SODIUM, 120 %.
ZINC DUST, SHEETS and SHAVINGS.
MABOR FUSION CUPELS and MATERIAL.
3 STAR CRUCIBLES and CRUCIBLE BARS.
3 STAR LITHARGE.
HARDWOOD MINING POLES and SAWING TIMBER.
"BRUNSVIGA" Calculating Machines.

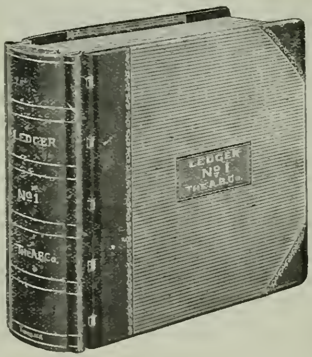
RICHARD HEYMANN & CO.,
73/5 Exploration Buildings.
P.O. Box 2425.
Telephone 351.
Telegrams: "Extra."

SUBSCRIPTION RATES.

Oversea	£2 0 0	per annum.
South Africa (by post)	£1 10 0	per annum.
Local Delivery (town only) ...	£1 6 0	per annum.

Half-yearly and Quarterly pro rata.

The best " Reef Traveller " is the *South African Mining Journal.*



ADOPT
Modern Office Methods
FOR THE
New Year.

Organization is fast becoming a science and office systems a necessity; progressive businesses are adopting Loose Leaf Books; new businesses begin with them, and older businesses will find it necessary to alter the old way of things or stand and wonder why orders go past them.

Records, formerly needless, must now be kept and time and labour saved by the use of Loose Leaf Books, their acceptance by responsible offices justifying confidence.

Enquiry on these matters will elicit much information and being System Specialists we shall be pleased to advise on these matters and furnish pamphlets. See about it before beginning the New Year.

P.O. Box 3664.
Telephone 367.
JOHANNESBURG.

R. L. ESSON & CO.,
Stationers, System and Loose Leaf Specialists,
LOVEDAY STREET, off MARKET STREET.

value unreduced of 21 dwts, reduced 10 dwts.; continuing. No. 4 crosscut, width so far exposed 140 feet, average assay value unreduced 7 dwts., reduced 4¼ dwts.; still in reef. Crosscut No. 5, 100 feet of reef exposed so far, average assay value unreduced 6 dwts, reduced 5 dwts.; still in reef. Good values have extended further east than we expected. No. 3 level: Have now struck reef at No. 3 level; width cut so far 10 feet, first 5 feet assays 5 dwts. reduced, next 5 feet pans over 3 dwts., assay not yet available. Reef continuing."

RHODESIAN ORE RESERVES.

Latest Returns—The Stock-in-Trade of Charterland Mines.

The following statistics are culled from the most up-to-date and reliable data available regarding the ore reserves of Rhodesian mines:—

Mine.	District.	Controlling Interest or Interests.	Ore Reserves.		Remarks.
			Tons.	Value Dwts. (per ton) or Shillings.	
Bell Reef	Gwelo ..	C.G. of S.A. (technical control) R.E.D. Willoughby's Cons.	24,670	11·1	See Mr. Piper's Annual Repor to Cons. Gold Fields
Buck's Reef	Gwanda ..	S. Neumann & Co. ..	6,830	14·5	Tons. Dwts. Buck's 4,030 at 15·9 Prestwood 2,809 at 12·4
Cam and Motor ..	Gatooma ..	L.R.M. & L. Co. and R.G.M. & I. Co.	700,000	47s. 2d.	Estimated at Sept. 30th, 1911, Total Gross Value, £1,653,000
Eil en Alannah ..	Hartley ..	Willoughby's Cons. ..	174,824	57s. 3d.	Total estimated value, £500,433 Total estimated profit, £273,162
Eldorado..	Lomagundi ..	R.E.D.	200,000	16	Based on an assumed stoping width of 16ft.
Falcon	Enkeldoorn ..	C.G. of S.A. (partial technical control)	1,000,000	"Payable"	Ore above 5th level on Falcon section of the Mines.
Giant Mines	Hartley ..	Weill & Co. .. .. L.R.M. & L.	3 8,146	9·88	Ore Reserves at June 0th last.
Globe & Phoenix ..	Que Que ..	———	177,606	35·7	Gross value estimated £1 356,238
Hay	Mazoe ..	L.R.M. & L.	32,489	10·24	
Jumbo	Mazoe ..	U.R.G.	26,057	9·87	
Lonely	Bubi	R.G.M. & I.	110,972	22·19	Based on 36ins.
Rezende	Umtali ..	F.A.F.	130,013		
Selukwe-Columbia ..	Selukwe ..	R.E.D.	40,000	13	Ore developed at June 30, 1911.
Shamva Mines	Abercorn ..	C.G. of S.A.	1 555,000	4·77	Reduced value.
Union Jack of Rhodesia	Lomagundi ..	C.G. of S.A.	11,580	15·3	All assays above 40 dwts. reduced.
Wanderer	Selukwe ..	B.E. Coy.	424,195	"Payable"	Includes reserves in Ashton and Camperdown Mines.

R.E.D.—Rhodesia Exploration and Development Company.
L.R.M. & L.—London and Rhodesian Mining and Land Co.
C.G. of S.A.—Consolidated Gold Fields of South Africa.
U.R.G.—United Rhodesia Gold Fields.
R.G.M. & I.—Rhodesia Gold Mining and Investment Co.
F.A.F.—Farrar—Anglo-French.
B.E.—Bechuanaland Exploration Co.

THE YEAR IN RHODESIA.

A Review of the Salient Features of 1911.

II.—TECHNICAL PRACTICE AND METALLURGICAL INNOVATIONS—THE CASSITERITE DISCOVERIES —CHROME IRON AND LEAD—COAL OUTPUTS.

As regards technical practice, the mines of Rhodesia have undoubtedly witnessed numerous changes for the better during the year just brought to a close. Particularly has this been the case in connection with metallurgy. Until recently there were not in vogue other methods of treatment for Rhodesian ores than milling and amalgamation, followed, perhaps, by rough concentration or cyanidation of sands in antiquated vats. Since, however, Rhodesian industry began to make real progress about three years ago the many interesting and complex problems relating to ore treatment in Charterland have received a more fitting share of attention and one finds to-day that Rhodesia can lay claim to such modern devices as Dorr Slimes Thickeners (in use, for instance, at the Hay Company's new plant), Pachuca Vats (as at the Lonely), grinding pans, tube mills, filter presses, etc. Notwithstanding these innovations there is still room for abundant improvement in Rhodesian ore treatment. Much useful work might be done by an institution modelled on the lines of the Transvaal Mines Trial Committee; an experimental organisation which would analyse the various types of ores and test the relative advantages and disadvantages of the various means of treatment advised for ores of different composition and value.

It is of especial interest to learn that at the Hay Mine in the Mazoe district an all sliming method of treatment is being practised, that an interesting and novel scheme of treatment for the New Found Out ore has been devised, and that at the Cam and Motor a plant very similar to that of the Kalgoorli Mine in Western Australia will be installed. The essential features of the scheme of treatment proposed for the Cam and Motor Company are double stage rock breaking —drying of ore in cylinders—zinc crushing in ball mills—roasting in mechanical furnaces—fine grinding of roasted ore in cyanide solution by tube mills—filtration—final precipitation and smelting. In view of the somewhat refractory nature of the Eileen Alannah ore, it seems probable that at this property also some out of the ordinary method of treatment will be necessary.

Underground Practice.

Of underground work but little remains to be said, save that as has been remarked in the two previous issues of the *South African Mining Journal*, underground organisation is in sad need of reform. This view can hardly be expressed in sufficiently emphatic terms. Things have changed greatly in Rhodesia of late, and it is common knowledge that the large limited liability company has not got anything like the efficiency out of the native labour forces of the country as the tributor or the small mine worker did. Neither has the large company secured such a measure of economy in connection with the use of stores, dynamite, mercury, etc., as the small proposition. It is, of course, only human to work better for oneself than for anybody else, and this is no doubt the underlying principle which makes for greater economy and efficiency in the case of the small mine and shows up the larger proposition to comparatively poor advantage. Still, it is very certain that large improvements are not only possible, but absolutely imperative.

Base Metals: The Tin Discoveries.

Before discussing the yields, etc., of individual gold mines during 1911, it will be of interest briefly to review the affairs of the several departments of the base metal industry. The outstanding feature of the year in this respect has been the discovery of cassiterite in various parts of the country. The three principal areas in which tin has been found are:

(a) In the Victoria District.
(b) In the vicinity of the Arcturus Mine to the East of Salisbury; and
(c) In the vicinity of the Shamva Mine.

In each instance the tin stone has been found at the contact of the granite, and the archæan schists in which formation most of the important gold mines of Southern Rhodesia have been developed. In addition to the three localities above named, the presence of cassiterite has, it is understood, been determined in Matabeleland. It is as yet too early to write in any definite terms of the value of these discoveries. In the Victoria Field the indications are promising, and if only from a scientific point of view it is of interest to learn that one or two rare and valuable minerals have been discovered in association with the tin stone. Several companies and syndicates have acquired interests in the Rhodesian tin areas, and the results of exploratory work will be awaited with considerable interest.

Chrome Iron and Lead.

The chrome iron output of Rhodesia has again proved a valuable adjunct to the gold industry, 50,527 tons being exported during the first eleven months of last year, as contrasted with 44,000 tons in 1910. Chrome iron ore has been discovered in two or three widely separated localities, but virtually the whole of the output to date has come from the Selukwe field. The produce is valued at slightly under 45s. per ton. The lead output registers a shrinkage. Virtually the whole production of this mineral is drawn from the Penhalonga mine in the Umtali district, another proposition situated in this locality, the Rezende I.W.A. tributed by the Imbeza Syndicate, contributing a small amount. The following tables state the chrome iron and lead outputs of Rhodesia for last year, and those are contrasted with the 1910 returns:—Lead: 1910 output, 748.89 tons. 1911 output: January, 59.49 tons; February, 49.61 tons; March, 53.18 tons; April, 57.03 tons; May, 58.34 tons; June, 64.24 tons; July, 51.62 tons; August, 54.03 tons; September, 43.71 tons; October, 50.49 tons; and November, 50.10 tons; total for 11 months: 591.84 tons. Chrome Iron:—1910 output: 44,002.00 tons. 1911 output: January, 4,454.00 tons; February, 6,531.29 tons; March, 1,960.00 tons; April, 7,896.96 tons; May, 1,458.25 tons; June, 7,504.00 tons; July, 2,441.60 tons; August, 4,057.11 tons; September, 3,640.00 tons; October, 7,560.00 tons; November, 3,024.00 tons; total for 11 months, 50,527·21 tons. Apart from chrome iron and lead, the only other base metal output to be recorded is a return of 2·25 tons of tungsten ore. No copper was produced in 1911, but 42 tons were declared in respect of the 1910 operations.

Coal.

The Wankie Colliery again monopolised the coal output of the country, the returns declared to the Rhodesia Chamber of Mines being as under:—1910 output, 180,068 tons; 1911 output: January, 14,895 tons; February, 12,890 tons; March, 16,727 tons; April, 17,705 tons; May, 21,613 tons; June, 17,613 tons; July, 17,674 tons; August, 18,835 tons; September, 18,013 tons; October, 19,197 tons; November, 19,038 tons; total, 194,200 tons. That the Wankie Company will hold undisputed sway to the coal trade of the country in the future is unlikely, as the Consolidated Gold Fields Company has acquired an extensive coal-bearing area to the west of Gatooma, and is now engaged in exploiting this concession.

(*To be continued.*)

Native Labourers Employed.

The report of the Executive Committee of the Rhodesia Chamber of Mines for October includes the summary of the returns of native labourers employed on Southern Rhodesian mines during the months of August and September:—

	August.	September.
Local	16,810	14,636
Portuguese territory	7,261	6,964
N.W. Rhodesia	4,604	4,458
N.E. Rhodesia	6,714	6,256
Nyasaland	4,238	4,215
Other sources	982	865
Totals	40,609	37,394

The decrease in the month of September as compared with the corresponding month of 1910 was 2,793 natives. The distribution was as follows:—

	August.	September.
Producing gold	25,242	23,870
Non-producing	13,906	12,424
Collieries, etc.	1,461	1,100
Totals	40,609	37,394

Morven (Rhodesia) Co.

The directors' report for the year ended June 30 last that the claims now stand at 151, a further 10 claims having been purchased during the year to protect the company's property from being encroached upon. The tributing arrangement entered into with the syndicate, mentioned in last year's report, has come to an end, the lessees having abandoned their lease owing to the cost of dewatering and reopening the mine. A certain amount of tailings left untreated by the previous lessee have been let on tribute for a royalty of 10 per cent. on the gross proceeds recovered by the tributor. The profit and loss account shows a debit balance of £4,795.

Charterland and General Exploration.

THE directors of the Charterland and General Exploration and Finance Company report for the year ended August 31, 1911, that a list of the most important holdings of the company was set out in the directors' report of last year; practically no change has since been made. At the Old Nic Mine crushing commenced with the 10-stamp mill upon February, 1911, and the monthly returns since that date up to the end of the company's financial year show that 5,514.25 ozs. of bullion were recovered, realising £20,254 at a total cost of £12,625. From Mr. Griffin's annual report it appears that the mine continues to develop in a satisfactory manner, and that at August 31, 1911, the reserves amounted to 46,972 tons, with an average value of 12.32 dwts. Information regarding the work which is being carried out upon the King's Daughter Claims is given in the Consulting Engineer's report. The board are of opinion that the property may develop into a valuable mine. The remaining claims belonging to the company are of small value, and will be dealt with as opportunity offers. The Washington 30 claims are comprised in the holding of the Umniati Trust, in which the company has an interest of approximately two-sevenths. Active development work is being carried upon these claims, and Mr. Griffin is of the opinion that there is a fair prospect of their being converted into a small payable proposition. The company now holds 112,342 acres of land in Mashonaland, and 131,630 acres in Matabeleland, 136,326 acres in Matabeleland having been sold, at a profit, during the financial year. An arrangement has been come to with the Bechuanaland Exploration Company, Limited, by which the joint ownership in a large amount of land has been cancelled, and an exchange of certain farms made. It was not possible to effect an exchange in connection with the Allendale, Blackwaters, and Esmyangene Blocks; owing to special circumstances, and they continue, therefore, to be held jointly. The net result has been a small reduction in the area held by this company, which is, however, off-set by the estimated value of the land acquired in exchange. The directors report that after making suitable provision for depreciation, etc., the profit available at August 31, 1911, including the amount brought forward from the previous account, amounted to £25,453. There was, however, a further estimated depreciation on some of the investments of £6,812, which the directors believe to be temporary, while on the other hand there was an appreciation on other investments of £2,463. On May 22, 1911, a dividend of 5 per cent. was paid, free of tax, which absorbed £8,190, it is now proposed to pay a final dividend of 2½ per cent., free of tax, which will need £4,095, and to carry forward the balance of £13,167.

B.S.A. Company's New Offshoot.

With reference to the recent formation of a company to carry on, under the auspices of the British South Africa Company, active mining operations in Southern Rhodesia, the committee of the Chamber addressed the company expressing their misgivings at this step. It has been pointed out that such a company may be in a position to compete on most advantageous terms with the existing development and gold mining companies which have been supported by shareholders in Europe, and that disappointment will be expressed that a company enjoying probably very special advantages in matters where the commercial rights of the British South Africa Company under the Mining Law are concerned has entered the field. The committee have further stated as their opinion that the formation of such a mining company would have been more opportune at some future date when the Commercial and Administrative Departments of the British South Africa Company are more clearly divorced one from the other than is the case at the present time.

Gaika G.M. Co.

The Gaika Gold Mining Company entered the dividend list in June last by declaring 5 per cent., which absorbed £13,024. The profit for the year to June last was £19,024 after providing for depreciation, etc., while £11,821 was brought in. The amount to go forward is £10,573. Development work has been carried on with vigour, and at the 6th and 7th levels, the deepest in the mine, excellent values have been obtained. At the 6th the lode is 4ft. wide, averaging 12½ dwt. for a length of 145ft. as so far driven, but in the succeeding level it is 4½ft. wide, and assays 16½ dwt. for the 80ft. so far driven. In a winze going down the width and value are improving, and the directors are quite justified in claiming that "a settled and regular formation of reef of high value has been proved." Mr. H. Ewer Jones, the consulting engineer, estimates that there are in sight 48,000 tons of ore and rubble, and he, apparently, is very well satisfied with results, although the leaves them to tell their own tale. The presence of antimony in the ore may be regarded as an excellent sign, for the Globe and Phoenix, which adjoins, has been troubled with this metal, although all difficulties have been practically surmounted.

New Rietfontein.

The following is a copy of a cable despatched to the London office on January 4th:—"New Rietfontein Estate Gold Mines, Ltd. Struck reef No. 1 Shaft 12th Level Crosscut North; assaying 33 dwts. over 7 inches. James G. Lawn says good prospects of considerable area being opened up Western section of property. Reason not struck earlier reef faulted down 280 feet from No. 8 Level."

HENRY R. MERTON & Co., Ltd.
2, METAL EXCHANGE BUILDINGS,
LEADENHALL AVENUE, LONDON, E.C.
England.
Cable Address: "MERTON," London.

SELLERS OF
Copper, Tin, Lead, Spelter, Antimony, Nickel, Aluminium, Quicksilver, Sulphate of Copper, Zinc-dust.

South African Representatives:
MESSRS. PARRY, LEON & Co.,
Mercantile Buildings, Simmonds Street,
P.O. Box 1101. JOHANNESBURG.

MINERS' BATHS.

Latest European Ideas—German and British Bath Houses.—Suggestions for the Rand.

In view of the attention now being paid to miners' health on these fields the following article by Mr. George Blake Walker in the *Engineering Magazine* is of very considerable interest and value. The advantages and comfort of bathing the human body have been sadly neglected in our northern latitudes, especially in connection with those industries and occupations which are in their nature dirty. In cities the public authorities provide facilities for bathing for the general public, but it is quite recently that bathing arrangements have begun to be provided in connection with industrial establishments. Yet that men who are now better educated and aspire to a more civilised mode of life should keep their bodies in cleanliness is almost essential to their self respect. It is my present business to show what has been done in the direction of the provision of bathing facilities in mines in Europe, and particularly at collieries. In the metal mines of Germany, in the Harz and in Saxony, baths of a sort have been attached to the premises for the use of the miners for some centuries. They were primitive in construction, consisting of tanks with a supply of running water, which was of course cold. Before the introduction of the steam boiler the means of warming the water were wanting. I am not aware whether the heat from the furnaces was in any degree utilised in old days, but obviously in winter bathing in ice-cold water would not be attractive. Within the last fifty years things have been much altered for the better. Much the same may be said of the tin and copper mines in Cornwall, England, where some very primitive bathing appliances still exist and have existed for a long time back. It was not till 1900 that the Government passed a law making it obligatory to provide bathing houses in order to bring the backward collieries into line. The following are extracts from the regulations:

Baths for Workmen.—At every separate colliery where miners regularly descend and ascend there must be a large room provided corresponding to the number of persons employed, in which the workmen can dress and undress. The room must be kept clean, well ventilated and warmed in cold weather.

Baths.—At every separate colliery where miners regularly enter and leave the mines there must be provided shower baths in proportion to the number of persons employed, and those must be maintained in good working order. The place must be so arranged that the workmen under 18 years of age should be separated from the elder men for the purpose of undressing and bathing. The water used for the baths must be such as will not be in any way prejudicial to the health of the workmen. The Mining Inspectors are authorised to take specimens of water from the baths and to have it analysed at the expense of the colliery company.

When in Germany in October, I especially asked whether there was any dislike on the part of the miners to compulsory bathing. The reply was "on the contrary, we should have a strike if the bathing facilities were withdrawn." These are, as a matter of fact, much appreciated by the miners themselves, who make use of the baths without the slightest demur or dislike. The German miner, therefore, is trained to bathe in public, and is not ashamed to do so. As will be hereafter described, the German baths are very large buildings, comprising a central hall and corridors, in which shower baths of warm water are arranged in rows. The arrangement is well shown in the plan of the Kaue at the Emscher Pit of the Cologne Colliery Company. It consists of a substantial brick building with a light roof with large skylights. It is 130 feet long by 77 feet broad, and comprises on the ground floor a large changing hall, for about 1,200 men, with 54 shower baths, a small portion of which, with 9 shower baths, is set aside for the youths. There is in addition a changing room with 5 shower baths for day labourers, to accommodate about 100, the object being to prevent the running of the large changing hall for a small number of men coming off at odd times. The lamp cabin and distributing room, ambulance room containing a slipper bath, mechanical engineer's office, shift-master's office, storeroom, and storekeeper's office, check office, and lavatory conveniences, complete the ground floor. Beneath the storehouse is a large cellar. On the first floor, by which the men enter from the pit bank, are the changing rooms and slipper baths for the officials, under manager's office, also slipper baths for the under-manager and mines inspector and the overmen's office. The interior walls of the large changing hall are covered with glazed tiles to a height of about 6 feet, insuring absolute cleanliness. Corrugated iron screens standing about 1 foot off the floor and about 7 feet in height screen the baths from the changing room; long benches are provided for the men to sit on. A particular feature is the elaborate control platform from which the chargeman can see the whole of the installation and regulate the supply of water to each group of baths, as it is required. The lamp-distribution station is very effective in design, enabling the lamps to be given out with maximum rapidity, and is very superior to the usual pigeon hole arrangement. Much ingenuity has been shown in recent installations in the arrangement of the interior of a large building which includes the changing rooms, washing rooms, lamp cabin, lavatories, and, in many cases also, surveyor's office, wages office and stores. The miner, leaving the pit by the covered way, enters the building, gives up his lamp, receives and hands in his check, and proceeds straight to the changing room; he there undresses, takes his shower bath, dresses, and hauls his mine clothes into place under the roof for drying. The method of storing the clothes is well worthy of attention, for each miner is supplied a galvanised-iron chain passing over a pulley in the roof, and having a hook at one end from which are suspended the clothes; also from this chain there hangs a box containing his soap and towel, and there is a padlock to secure the chain when in position, so that no tampering with another miner's clothes is possible. Shower baths have been approved as being most suitable to the conditions. Cold water under pressure is led into a boiler to which there is also a supply of steam and a careful mixture is made, water at 35 degrees C. (95 degrees F.) being distributed under pressure to the baths. The floor of the building is usually of concrete and slopes gently from each side below the shower baths to a large gulley which can be easily flushed out and inspected; at least three times a day a thorough cleaning is carried out by flushing the room with water under pressure from a hose pipe. Efficient lighting is secured by large windows and by electric light at night time; heating is effected by hot water radiators causing a current of warm air to ascend to the roof where it passes out through air ducts, drying the wet clothes on its way; perforated metal cupboards were tried in which to place the mine clothes, but it was found that drying was very much hindered and it was impossible to keep them clean, and on this account they have been abandoned. Separate changing and bathing rooms are now in general use for youths below the age of 18 years; the partition is of sheet metal painted white, and about 8 feet high. Many mines have incorporated in the main building separate bathrooms for the manager, overmen and other officials; a few have a large covered-in yard where the men can be paid or hold meetings; a storeroom, lamp-cleaning and repairing shops, and even the benzine store, but it must be borne in mind that by law this matter must be at least 10 metres from the shaft buildings. There is every reason to congratulate the Continental engineers on the initiative and zeal shown in carrying out the scheme for providing adequate changing and bathing accommodation for the miners, but it would be preferable so far as Britain is concerned if a cubicle system were employed, securing more privacy than that obtainable under the present conditions.

An excellent installation of workmen's baths has been erected by Messrs. Brunner Mond and Co., at their chemical works at Winnington, Cheshire, England. In this instance the arrangement of the baths has been most ingeniously designed and carried out by the Leeds Fireclay Co., Ltd., on a new principle involving a minimum of space and a great saving in length of partition wall. The baths are laid out in a zig-zag cubicle system, each angle containing a shower bath, a water-proof curtain forming the third side; by this arrangement the length of a row of baths is approximately halved, but owing to the shape of the cubicle there is plenty of room for a man to scrub himself, the widest part of the cubicle being 6 feet. The partition walls are made of white glazed brick, and the seat and footbath, which is sunk flush with the floor, are made of strong fireclay. The wastes discharge to a channel covered with a galvanized iron grating to which the floor of the dressing cubicle falls, enabling the whole place to be thoroughly cleaned out with a hose pipe fed from special hose taps. There are hot and cold water mains of which the user has full control, a patent valve ensuring that the cold water is turned on first, thus precluding all risk of scalding. The dressing boxes are constructed of wood, the partitions standing well clear of the floor, so that a hose can be freely used. At the end of the building are six slipper baths, while sanitary accommodation is provided by four closets and four urinals. A laundry is also run in connection, equipped with a large washing machine, tubs, drying horse, mangle, etc., so that the washing of towels can be accomplished with a minimum of labour. Steam for this and for the heating of the building is provided by a vertical boiler. There are two drying rooms, one on the ground floor, and one on the upper floor, consisting of 200 cupboards supported clear of the floor and each numbered and furnished with a key. Above each cupboard there is provided a quadruple hook, the rope of which works over a pulley secured to the ceiling; the end passing through the top of the cupboard is secured to the interior by a hook, so that the clothes cannot be lowered by any one except the possessor of the cupboard keys. Hot air is driven into and across the room by a fan in order to dry the clothes, and a large ventilator in the roof extracts the foetid air from the drying rooms and laundry. The services of only one man are required to look after the building. It is now proposed in connection with the new British Mines Bill that similar facilities should be conditionally provded at the collieries in Great Britain. This provision, which the Home Secretary described as a "daring innovation," is left optional. It is for the men to demand it. The outcome is doubtful. There is no doubt that while the leaders of the miners are heartily in favour of compulsory bathing, there is among a large section of the men themselves a considerable amount of dislike to change of any kind; and the British workman is particularly obstinate in resisting anything which is thrust upon him, even though he cannot deny that it may be for his own benefit. He may admit that the present conditions are bad, dirty, and insanitary, and that his wife and family are much inconvenienced by them. Notwithstanding this, many in their present frame of mind are undoubtedly opposed to compulsion.

TAILINGS WHEELS AND PUMPS.

[By G. A. Robertson.]

Tailings wheels on the Rand are fast dying out, partly due to the fact that they have done good service and have run their course. This type of elevator was in early days considered reliable. It required a drop of oil once per shift, and the millman was never far out of his reckoning in taking it for granted that as long as the mill engine was running the tailings wheel was all right. The tailings wheels now standing idle have survived many a storm. They are not delicate machines; in fact only in few cases have they been deemed worthy of a shelter. Tailings wheels are driven by belts, cotton or wire ropes, and a spluttering feed of sand into their mechanism was never considered serious. The first tailings wheels which were worn out elevated the pulp to a height sufficient for it to gravitate to the double tier tanks. The cost of a new wheel for this purpose was then put down at £2,000, whereas the cost of two centrifugal pumps to meet these requirements is said to be £800. The double tier treatment tank is now not favoured; the height of elevation of pulp for the single tank is about half that formerly required. This height of elevation of pulp now allows classification and amalgamation being carried out within an elevation limit of 50 feet.

In these circumstances there is a useful field for small tailings wheels. The tailings wheel, when properly applied in all its details, is a perfect elevator, without producing the spill which is said to be its drawback. The delivery to this elevator is a matter which has received little or no attention. This is apparent when it is seen that in many cases the buckets are worn on the one side only. Further, it is not unusual to find the pulp given a drop to the wheel buckets of from 12 to 24 inches and even more. There is no occasion for this drop to be any more than two inches, and this can be accomplished by previously terminating the tailings launder with a box, allowing the pulp to overflow from the box on to an arch deflecting board, which then feeds the buckets against and with the run of the wheel. The distribution of the pulp along the buckets is easily accomplished by means of riffles nailed to the deflecting feed board. These methods, properly applied, will not only reduce the wear and tear on buckets to a minimum, but also obviate spilling at the delivery to the wheel. In the wheel sump of many of the tailings wheels running, two natives clothed in sacks are continually employed lashing the spill sand back into the wheel. Where the spill takes place at the receiver launder above, a device was introduced by the mill carpenter at the New Primrose mine where the backflow from the splashboard of the tailings wheel which formerly dripped on to the buckets, causing spill, was arrested and re-delivered to the launder feeding the wheel. The same idea is also applicable to the overflow splashboard, which, with the addition of a little water, would obviate any spill taking place. Spill from a tailings wheel when in operation is only due to the disregard of these precautions. It is doubtful if the tailings wheel on the cycle spoke principle is the best. The New Primrose wheel is of wood, with one row of side-spokes to act as stays. The formation of a lime scale on wood, caused by the mill water, acts as a preservative whereas the same scale formed on iron does not prevent corrosion. Tests with different kinds of buckets carried out at the New Primrose mine with glass, wood and ⅛in. iron plate proved that the latter gave the best results, besides increasing the capacity of the wheel. The Pretoria Portland Cement Company offered to make thin concrete buckets, and with a wheel of large diameter this type of bucket would, I believe, give good service.

Several tailings wheels to-day standing idle are not by any means worn out, but owing to extensions to the tube mill plant or cyanide works a change was necessary from the point of elevation, and it is found cheaper to instal two centrifugal pumps where wanted rather than remove the tailings wheel, which, though good for some years to come, would not survive a removal. Pumps, in order to compete with tailings wheels, require to be well housed, and with due attention to their more delicate mechanism there is no occasion for the worry and trouble we so often hear of, which is, as far as the writer has seen, entirely due to the misapplication of their needs. Centrifugal pumps should be placed in a large and well-drained sump so that all the parts can be easily taken asunder without the removal of the pump box. An overhead travelling tackle should also be provided. Any type of centrifugal pump will do good work, but the most adaptable to the present needs, as far as the writer's experience goes, is the Robeson-Davidson pump. As these pumps have been described before in these columns, the writer will only mention the precautions necessary for their efficient running. The Knight Central mine is equipped with two of these pumps, one being used as a standby. They are placed in a large concrete lined sump 32ft. long by 21ft. wide and 13ft. deep. At the east side is a storm ditch, which makes it impossible to flood the sump. Both glands are equipped with water service pipes ¾in. diameter, with test cocks to prove the water service. The grease cups for the glands are fitted with cut-off cocks, so that the cups can be re-filled without ejecting water into the attendant's face. Each packing box pipe is fitted with its own valve, thus allowing renewals or cleaning out of pipes to be done in comfort. On both pumps a long belt drive is given. The water feed to the glands is pumped direct, and a reserve supply is obtained from a tank on the headgear. The efficiency of the water service, lubrication and adjustment of the glands is proved by the fact that the vane shafts, which have been in use over a year, show no signs of wear. The principle of allowing the pump box to overflow when the power is cut off is not practised there, because sand which will collect in the pump may cause delay in restarting. When the power fails the native withdraws a gate and by-passes the pulp feed into a box 12ft. long, 4ft. wide by 8ft. deep, which is as a rule sufficient for the collection of the sand from tube mills discharging pulp when stopped or during a hang-up of the mill. This sand collected is then fed to the pump when running. In new designs our mechanical engineers might carry this idea a little further by adopting a double compartment pump box, so that when the power failed one section of the box would hold the mill feed; then when the pump is running the collected pulp from that compartment could be automatically discharged to the feed pump box with the adjustment of a gate. There are no collars on the Robeson pump to come loose, and the thrust end of the shaft, which is ball-bearing, allows the vane to be kept in its true position within the shell liner. The liners of the Knight Central pumps, including the vane, are patched with magnesite concrete. A white iron shell liner with a concrete wearing face ¾in. thick requires patching every five to six days. Taking off the pump door and turning the vane shaft the reverse way it is driven allows the vane and shaft to be taken out in a few minutes. With perforated vanes, etc., or means which will allow better reinforcing of the concrete and binding it to the wearing faces would allow a longer life to be obtained. The influences of a local thunderstorm are troublesome at this time of the year in cutting off the power from electrically driven machinery. It is well in all mills that one main valve is handy within the battery, so that all water to stamps may be immediately shut off without the turning of a multitudinous number of small valves. Suction and delivery valves on a tailings pump elevating coarse sand are a nuisance. A Dowsett pump flow regulator is cheaper and serves the same purpose, giving a steady flow at the head of the column so essential to the successful operation of hydraulic classifiers. Where pumps are running unsatisfactorily, it is due to bad fittings, imperfect water service and their being placed in awkward positions, perhaps necessitating repairs being executed in a perfect puddle. In many cases no means are provided to show whether the water service to the glands is good or bad, and the first indications to the attendant of the failure of the water service is the wearing out of the packing and knocking of the shaft. Driving belts are sometimes too short, with the result that hot bearings are included in the troubles.

A tailings wheel takes less horse power to drive than a centrifugal pump. A stand-by or spare elevator beside a tailings wheel was, before the advent of tube mills, never considered necessary, nor do I consider it necessary to-day. The height of elevation with a pump is easily altered. This is not so with a tailings wheel. A new pump vane is of greater elevating capacity than a worn one, and a vane need not be run faster than is necessary, plus a factor of safety to work upon. As the vane becomes worn, it is good practice to increase its speed by keeping a few different sizes of motor pulleys in stock which can be changed when necessary. The engineers of the General Mining and Finance Corporation prefer the wheel "both from a question of efficiency and economy." Pumps to run well require continuous feeding with clear water. They require more attention than tailings wheels, but what the difference in economy of operation is only carefully kept accounts will show. The mill carpenter and mill fitter as a rule execute all repairs to tailings elevators; unfortunately, however, their time is all charged up to milling or tube milling. It is therefore a difficult matter to put up a show of figures detailing costs of pulp elevation on a mine for twelve months, which would stand the ordeal of a searching investigation and then be duly docketted as "examined, found correct and approved of" by someone acquainted with our little ways, say, for instance, Mr. Stadler, formerly the Mines Trials Committee.

Mocambique Mining Regulations.

We have received from Mr. Austin King, Director of Mines for the Companhia de Mocambique's territories, a neatly got up little volume containing the Mining Regulations of the territory of Manica and Sofala, under the administration of the Companhia de Mocambique, and approved by the decree of April 24, 1911.

At the Johannesburg Stock Exchange, last Saturday morning, there was a very large attendance of members, who were present to witness the presentation of a cheque of £700, a rose bowl, and a silver tea service to Mr. Charles Power, who has retired from the secretarial chair of the Exchange. Mr. D. C. Greig, the chairman of the Exchange, made the presentation, and, in doing so, gave vent to some very strong remarks upon the condition of the gold mining industry on the Rand. He said he thought that the whole of the native labour recruiting should be under the direct control of the Government. His reason for saying this was that there was a great deal too much extravagant competition, and unless the whole labour supply was dealt with by the Government there would be still further trouble. Another point he made was that while the labour supply was in its present state he thought that the mines which were only hovering upon the brink of profit and loss, should close down, and that the labour thus liberated should be distributed among the mines upon which it could be used to greater benefit. He went on to advocate a Government inquiry into the whole system of control by the mining houses. In his opinion the methods of control adopted were far too extravagant and costly. "I think," he said, "a Shareholders' Protection Association should be formed here which would work in conjunction with the Association at home with the object of protecting the interests of all shareholders." In conclusion, he said that although times were bad and people were thinking that the foundations of finance were falling in, they had reason to look forward to a better year. Mr. Chas. Power briefly and feelingly replied. Mr. Power was for twenty-three years a member of the Johannesburg Stock Exchange, and Secretary for the last fifteen years. He is now retiring to farm in Natal.

LITERATURE FOR
MINING CAMPS.

MINE READING ROOMS should send direct to London for their Literary Books and Periodicals, or for Technical Books for individual use. List of Rates of Subscription for 1,500 Periodicals; also complete Book Catalogue of 180 pp. post free.

Colonial Librarians' Handbook free on application.

SPECIALITY: Colonial Editions of Fiction.

Remit direct, or through your London Office at choice.

ALFRED WILSON, Export Bookseller,
18-19 Gracechurch Street, LONDON, E.C.
(Estab ished 1851.)

Blaauwbosch Diamonds.

The washing returns of the Blaauwbosch diamond mine for December were:—3,297 loads washed for 1,331½ carats, or 41·91 carats per 100 loads.

Wankie Colliery.

The financial position of Wankie Colliery for the twelve months to August 31 shows no great improvement upon that shown by the previous accounts, which covered a period of thirteen months. Coal sales, for instance, produced £89,249, against £89,223, and the total income amounted to £91,655, compared with £91,199. The profit is higher at £32,686, and the sum brought forward was £8,271. Out of this the directors raise the dividend from 10 per cent. to 12½ per cent., which absorbs £25,327, and leaves £15,629 to carry forward. At the close of last year the company paid off £5,000 of the 6 per cent. first mortgage debentures, and a similar amount will be paid off on December 31 next, thereby reducing the debenture debt to £50,000. Sales of coal amounted to 150,829 tons, against 140,558.

Bushveld Tin.

The annual meeting of the Bushveld Tin Mines, Limited, was held in Johannesburg last week. After reviewing the work of the year, which had been confined to prospecting on Enkeldoorn, and which was stated to have given encouraging results, the Chairman (Mr. E. Brayshaw) concluded: "There is nothing left, I fear, but some re-arrangement of the finances of the company in order further to test your property, which I still consider has possibilities as a tin proposition. Your interest in the Kuils River Tin Mines, Ltd., remains the same as last year, and your board hope that in the course of a month or two the loan will be refunded, and the shares have a market value. The Chairman added that the pipe on the property looked like a chimney, and should be the main working. In its neighbourhood they had the rich ore."

ECONOMY IN FUEL.

Users of coal for domestic business or steam-raising purposes are now recognizing the saving of time and money effected by using only the best Transvaal coal and this coal is mined from the Vaalbank (Middelburg) Colliery.

This coal, which can be obtained at about the same price as inferior coal, gives the highest heating value of any Transvaal coal, burns regularly and gives a minimum of ash or soot, and the fact that a trial order is always followed by repeat orders confirms the favourable opinions expressed by the present users of the coal.

Supplies of Vaalbank coal can be obtained from:—Johannesburg—A. E. Dunstone, Box 5034; The Holmes, Darcy Coal Agency, Box 5176; Benoni—Lindsay & Pirie, Box 5; Unsted & Holland, Box 316; Webb & Co., Box 370; Boksburg—J. D. Campbell, 105, Commissioner Street; Germiston—C. A. Margach, Box 223; Heidelberg—L. Lowenstein, Box 175; Bloemhof—J. Leviton; Kimberley—A. G. Freeman, Box 154; Pretoria—R. Butler & Co, Box 747; J. Franklin, Box 51; Middelburg—H. Laver & Co., Box 94; Lydenburg—M. McGee, Box 24; Pilgrim's Rest—J. H. Alcock, Box 36; Barberton—D. Wasserberg & Co., Box 167; Delagoa Bay—I. Sangiorgio-Borruso, Box 366; Pietersburg—B. Herman, Box 36.

THE WEEK IN THE SHAREMARKET.

Quiet with a Slightly Firmer Tone—Outlook Brightening.

An improved tone was noticeable in the market after the holidays, though it did not continue long. On Thursday prices were easier again, though several stocks remained firm, notably City Deeps and Benonis. Tin stocks are quiet, with a little demand, but diamonds seem lifeless, despite the activity in this line in London. The discovery of the faulted reef at the New Rietfontein is a good augury for the New Year, and it only requires a few similar cheerful items to alter the complexion of affairs. The very outspoken remarks of the Chairman of the Stock Exchange have excited much comment, and it is thought they will do some good. There is still very little business to go round, and brokers may be forgiven if they lose no opportunity to air their grievances. At present, but for the possibility of a tin boom, the New Year holds out no immediate promise of an improvement.

	*	*	*	*		
	Friday, 29th.	Sat., 30th.	Monday, 1st.	Tuesday, 2nd.	Wed., 3rd.	Thurs. 4th.
African Farms ...	17 2B	17 3B	...	17 6B	17 6B	17 0
Aurora West ...	7 6S	...	...	...	7 6B	7 6B
African-European In.	11 0S	11 0S	...	11 0S	...	...
Apex Mines ...	32 6B	34 0B	...	34 9B	35 3B	...
Bantjes Consolidated	23 0B	23 3	...	23 6B	24 0B	24 0
Benonis	10 0B	10 3	...	10 6B	11 3	11 9
Blaauwbosch ...	...	...	...	20 0S	...	19 0
British S A. ...	...	...	...	...	...	28 0B
City and Suburban ...	51 0	50 6B	...	45 9B	46 0B	46 3B
City Deeps	45 9	46 0	...	44 9B	47 6B	49 0B
Cloverfield Mines ...	3 10	3 10B	...	4 1B	4 2B	4 3B
Cons. ~~Langlaagtes ...~~	~~17 0~~	~~17 0B~~	...	~~17 6~~	17 6B	18 0
Cons. Main Reefs ...	16 3	16 3B	...	16 0B	16 6	16 0B
Clydesdales	12 0B	...	...	...	12 0B	12 0B
Crown Mines ...	135 0B	...	...	...	132 6S	...
East Rand Cent. ...	8 0B	8 0B	...	...	8 0B	8 0B
East Rand Coals ...	2 8B	2 8B	...	2 8B	2 10S	2 8B
East Rand Deeps ...	2 4B	2 3B	...	2 7S	2 7S	2 3B
East Rand Props. ..	65 0B	65 9B	...	64 6B	64 3B	...
East Rand Deb. ...	£96½	£97	...	£98	£98	...
Eastern Gold Mines	1 11B	1 9B	...	1 11B	2 1	2 0B
Govt. Areas... ...	21 6	21 0	...	20 6B	21 6B	21 6
Glencoe (Natal) Colls.	6 9B	6 6B	...	...	6 0B	6 0B
Glynn's Lydenburgs	40 0B	...	...	40 0B	...	...
Ginsbergs	31 3B	...	...	28 0B	28 6B	29 0B
Jumpers ...	12 3B	...	...	...	13 6B	...
Jupiters ...	8 6B	8 0B	...	8 0B	8 3B	9 0
Kaalfontein Diamonds	...	...	...	...	...	0 5B
Klerksdorp Props. ...	...	...	...	2 8B	...	2 6B
Knight Centrals ...	15 3B	15 0B	...	...	15 0B	15 9B
Lace Props.	2 10B	2 10B	...	3 1S	2 10S	3 2S
Lydenburg Gold Farm	8 0	7 10B	...	7 9B	7 10B	8 0B
Main Reef Wests ...	25 6	25 0B	...	23 9B	21 6	24 0B
Modder B's	53 9	53 9	...	54 6S	54 6	51 0B
Midas Deeps ...	1 2B	1 2B	...	1 2B	1 3B	1 3B
Middelvlei Estates...	2 0B	1 9B	...	...	1 9B	2 0B
New Eras	5 6B	5 6B	...	5 6B	5 6B	5 6B
New Kleinfonteins ..	28 6	28 0B	...	...	28 0B	28 3
New Rietfonteins ...	10 0B	10 3B	...	9 9B	10 9B	10 9
Natal Navigations ..	15 6B	15 6B	...	...	...	...
New Heriots ..	100 0S	96 0S	...	...	...	96 0S
New Unifieds ...	20 0B	20 0B	...	...	...	...
Orange Diamonds ...	1 8B	1 9B	...	1 9B	1 7	1 7B
Pretoria Cement Co.	62 0S	60 0B	...	53 6B	54 9	55 0B
Princess	...	...	...	...	14 0B	...
Premiers Def. 2s. 6d.	162 6B	...	...	...	...	...
Rand Nucleus ...	3 0	3 3S	...	2 9B	3 0	3 0B
Randfontein Estates	32 0B	32 0	...	32 9B	33 6B	33 9B
Robinson Deeps ...	59 6B	...	...	...	55 0B	55 6B
Rooiberg Minerals ...	28 0B	28 0	...	27 6S	26 6	26 9B

B Buyers. S Sellers.

	Friday, 29th	Sat., 30th	Monday, 1st.	Tuesday, 2nd	Wed., 3rd	Thurs. 4th.
Rand Klip	...	4 0B	...	4 0B	4 0B	4 0B
Roberts Victors ...	20 0S	19 0B	...	20 0B	20 0B	20 0B
Rood. U.M.R. ...	...	...	...	...	...	23 0
Simmer Deeps ...	...	...	...	...	...	4 3B
South African Lands	4 0	4 0	...	3 10B	3 10B	4 1B
S. Randfontein Deeps	2 8	...	...	...	3 0B	3 3B
Sub Nigels	6 9B	6 9B	...	...	6 9B	6 9B
S. A. Breweries ...	...	38 6B	...	...	38 6B	...
Trans. Coal Trusts...	34 6B	35 0B	...	...	34 3B	34 6B
Trans. G.M. Estates	46 3	...	...	...	47 0	44 6
Temple Tins	2 6B	...	...	2 6B	...	2 6B
Van Ryn Deeps ...	8 0	...	...	7 9B	7 9B	7 10B
Village Deeps ...	42 6B	42 6B	...	41 6B	42 0	42 0B
Witbank Collieries...	...	...	...	39 6B	41 3B	41 6B
Wolhuters	22 6	22 6B	...	22 6B	23 0B	...
Wit. Deeps	...	55 0B	...	...	55 0B	55 0B
West Rand Est. ...	...	3 0B	...	4 0S	...	...
Zaaiplaats	77 6B	77 6B	...	77 6B	77 0B	75 6

B Buyers. S Sellers.

INVESTORS' DIARY.

The following company meetings have been announced :—

Feb. 20.—Premier (Transvaal) Diamond Mining Co.
Feb. 28.—East Rand Prop. Mines.
March 6.—Crown Mines.
March 7.—Rose Deep.
March 8.—National Bank (at Pretoria); Geldenhuis Deep
March 12.—Durban Rood. Deep.
March 13.—Robinson G.M.
March 14.—Bantjes Con. Mines.
March 15.—Village Deep.
March 20.—City Deep.
March 21.—Ferreira G.M.
March 22.—Modder "B."
March 27.—Rand Mines.

Glynn's Lydenburg.

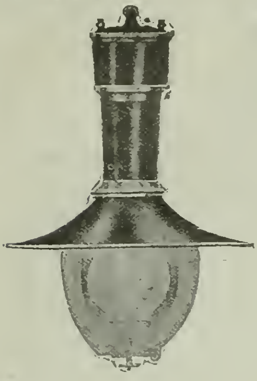
The manager wires that the output for the month of December, 1911, is as follows:—Tons crushed, 2,812; yielding 1,577 ozs. fine gold, valued at £6,552. The profit for the month is estimated at £3,595.

Manicaland Output

The mineral output of the Territory of the Companhia de Moçambique (Manicaland) for the month of November, 1911, is as follows:—Gold won (fine gold), 243 ozs. 0 dwts. 5 grs.; tons crushed, 1,649; value, £1,020 10s. 11d.

The report of the Commission on Commerce and Industries is in the hands of the printers, but it will not be published until it is presented to Parliament.

Draughtsman, used to Mine and Surface work, plotting and planning, as well as quantity surveying, requires appointment; excellent local credentials.—Apply, "J. E.," c/o *S.A. Mining Journal*, Box 963, Johannesburg.



THE JANDUS LAMP

(REGENERATIVE)

Revolutionizes
Electric Lighting.

A COMPARISON —

	Metallic Filament.	JANDUS Regenerative.
WATTS	600	400
Candle Power	500	2000

The Special Carbons, burning in an air-tight enclosure, cost less per hour than Metallic Filament Lamp Renewals.

SOLE AGENTS—

WESTERN ELECTRIC CO., Ltd.
(Incorp. in England).
17, STANDARD BANK CHAMBERS,
JOHANNESBURG.

'Phone 2118. *Telegrams: "MICROPHONE."*
P.O. Box 1571.

For Speed of Drilling and Ease of Handling.

THE

SISKOL HAMMER DRILL

Has Beaten all its Competitors.

We will send our Hammer-Drill on trial to any Mine in South Africa to compete against any Hammer - Drill on the Market.

Write for full particulars—

International Channelling Machines, Limited,
(Incorporated in England),
2 & 3, TRUST BUILDINGS, JOHANNESBURG.

Box 1382. Telegrams: "SISKOL." 'Phone 2643.

THE STANDARD ANTI-FRICTION METAL OF THE WORLD
MAGNOLIA METAL
FLOWER BRAND.
FLOWER BRAND.
MAGNOLIA ANTIFRICTION METAL
FACSIMILE OF INGOT.
TRADE MARK.
TRADE MARK.
TO PREVENT IMPOSITION SPECIFY "FLOWER BRAND."
THE MAGNOLIA ANTI-FRICTION METAL CO. OF GREAT BRITAIN LTD
49, QUEEN VICTORIA STREET, LONDON, E.C.
Sole Agents for South Africa: MESSRS. FRASER & CHALMERS, LTD JOHANNESBURG, BULUWAYO AND SALISBURY.
BEARING METALS TO SUIT ALL CONDITIONS SUPPLIED.
CATALOGUE SENT POST FREE.

Engineering Notes and News.

Electricity in Mines: The Avoidance of Accidents.

At a joint meeting of the Scottish Branch of the National Association of Colliery Managers and the West of Scotland Branch of the Association of Mining Electrical Engineers, the discussion was resumed on the paper recently contributed by Mr. Robert Nelson, H.M. Electrical Inspector of Mines, Home Office, London, on this subject. Mr. C. A. Atchley, Kilmacolm, said the question of accidents due to electricity in mines was becoming a very serious one. He thought that in the majority of instances, particularly in new work, armoured cables were safer than unarmoured cables, but feared that in introducing armoured cables right away in preference to unarmoured cables, which represented at present the bulk of underground cabling, they were going much too fast. The class of men which was quite able to keep up an unarmoured cable installation was not—except after a considerable period of training—equal to the responsibility of maintaining an armoured cable system. Until they had had an opportunity of training a body of men capable of undertaking the work, the compulsory use of armoured cables in a colliery, particularly with the D.C. system, should be gone about slowly. Mr. A. B. Muirhead, Lenzie, said he was not satisfied that the earthing of everything was going to result in safety. If everything electrical in the pits was to be connected up through armouring and carefully earthed, the standard of insulation might begin to deteriorate, with the result that, very soon, they would be worse off than before. The question of insulation was not receiving the same amount of attention as earthing. Mr. McVie, colliery manager, Bothwell Park, Lanarkshire, said that colliery managers were in somewhat of a difficulty, because they had the Home Office issuing rules that every system was to be earthed, while, on the other hand, they had experts like Mr. Muirhead asserting that the Home Office was practically in the wrong. The Home Office was altogether on wrong lines in insisting upon earthing throughout the whole of an electrical system. Mr. G. L. Kerr, Glasgow, asked whether it was preferable to earth a section of the plant underground locally, or to bring the whole of the earthing to some central point at the surface. Then there was the further point as to whether the earth wire was better carried outside or inside the cable. At least one fatal accident had occurred where the victim actually lost his life on the earth wire. The Chairman said the point raised by Mr. Kerr as to whether the earth wire should be outside or inside the cable, was one which was giving electrical engineers some concern at the present time. At one period he favoured the idea of the earth wire being inside, but now, in the majority of instances, he was absolutely opposed to that if he could get it on the outside. If an earthing system were adopted they could not have too many earthing points; the surface should be one of these points. With regard to the question whether three-phase or direct current was the more dangerous system, he had no hesitation in pronouncing against three-phase.

At the recent Smithfield Show, Messrs. E. R. & F. Turner, Ltd., St. Peter's and Grey Friars Works, Ipswich, had a most attractive array of mills and engines, well finished in good artistic colours, and arranged to the very best advantage. Although their Oil Engine has only been introduced comparatively recently, it has already made a name for itself in the Eastern Counties, and is by universal consent ranked with the very best makes which have been on the market for many years. Several advantages are claimed for this engine, which puts it ahead of even these, one being its great economy in working, and another the fact that the power for which it is sold is not the maximum, but the best continuous working load, and that even the stated maximum load may be exceeded without pulling the engine up on emergencies. It is mounted on a heavy cast-iron base, which, besides acting as a foundation for the engine, contains the oil reservoir, from which the oil is pumped for feeding the engine. This reservoir can be easily removed for cleaning purposes. It is filled by means of a funnel on the outside, and is fitted with a gauge for showing the supply of oil. The engine is well finished and looks very massive and well proportioned. Two sizes were exhibited on the stand, one 5 B.H.P. and the other 8 B.H.P. continuous working loads. The sizes made range from 2 to 20 B.H.F. A "John Bull" horizontal engine was also exhibited, suitable for working at a boiler pressure of 100 lbs. per square inch, and of giving off 13 B.H.P. of most economical load.. The first of the mills to claim attention was their new combined mill for crushing oats and grinding maize, beans, etc.; the plates in the grinding part are exactly the same as those supplied with the "Inkoos" Mill, being made of Turner's well known chilled iron. The rolls are of hard cast iron, the spindles are fitted with self-oiling bearings, and the adjustments of both plates and rolls are easily and quickly made to suit requirements. The mill is well fitted throughout, of good design, nicely finished, and already commands a ready sale. It is made in four sizes, the one shown being the largest but one. A line of "Inkoos" grinding mills was shown, which, with the firm's crushing mills, require no comment beyond saying that they look as smart and business-like as ever, and are not likely to lose favour in the eye of the public at present. A small flour mill, suitable for making standard flour, and similar brands was shown, consisting of one of Turner's "Sirdar" mills, fitted with vertical stones, which deliver into a small reel or cylinder in which the flour is separated from the offals and the latter from the bran, thus making three separations. The mill and dresser are mounted on a wooden frame and can be driven by a single belt, giving a handy little self-contained arrangement, requiring little power and producing excellent results. A separate "Sirdar" Mill, fitted with larger stones of emery composition, was also shown, this being largely used for grinding all sorts of material, including husks and bran, etc.

HIC TRADE MARK.
H. INCLEDON & Co., Ltd.
(Head Office, Birmingham: Registered in England.)
Telephones 1911 and 1912,
P.O. Box 3620,
JOHANNESBURG.
ALL SIZES OF
PIPING, AND FITTINGS,
VALVES, Etc.
FROM ¼" TO 18" KEPT IN STOCK.

THE

C-110 DRILL

(Butterfly Valve)

WILL PUT IN

2 HOLES MORE

per Shift than any other Drill.

C-110 Drill Stoping on the Village Deep Mine.

INGERSOLL-RAND

Coy.,

Exploration Buildings, Johannesburg.

Phone No. 1871. P.O. Box 1809. Telegrams: "Outsider," Johannesburg.

RHODESIAN AGENTS: JOHNSON & FLETCHER, BULAWAYO. SALISBURY.

Commerce and Industries.

Transvaal Bank Returns. Comparisons are made possible by the publication in the "Gazette" of the abridged balance sheets of banks doing business in the Transvaal. The figures are dated as for November 30, 1911. In the following series of extracts, the corresponding figures for December 31, 1911, are given. The amounts of money held by the banks to the credit of their customers steadily advanced in the aggregate, but a feature was that the proportion held on fixed deposit declined substantially. Reference to the following table will show that whereas the total amount of fixed and floating deposits held by banks within the Union advanced by less than £200,000 during the two years ended with 1910, the amount held as current account balances rose by over two and a quarter millions. The changes in the amount on fixed deposit were as follow: December 31, 1908, £8,061,000; December 31, 1909, £7,441,000; December 31, 1910, £5,904,000; November 30, 1911, £7,802,000. The details may be gleaned from the following table. What bearing the increase of nearly two millions sterling during the first eleven months of the year just closed has upon the commercial outlook it would be premature to speculate:—

	DEC., 1910.	NOV., 1911.
A.B.C.	£989,000	£1,216,000
Bank of Africa ...	603,000	482,000
Natal Bank	845,000	849,000
National Bank	1,988,000	2,971,000
Netherlands Bank ...	198,000	195,000
Standard Bank ...	1,281,000	2,089,000
Totals	£5,904,000	£7,802,000

In the following table we give comparative statements of the current account balances during the period. It may be mentioned that the total as at December 31, 1909, was £7,804,000. The advance of nearly £150,000 during last year is in striking contrast with the increases of about £1,300,000 during 1909 and £1,000,000 during 1910:—

	DEC., 1910.	NOV., 1911.
A.B.C.	£764,000	£727,000
Bank of Africa	802,000	691,000
Natal Bank	775,000	790,000
National Bank	3,482,000	3,774,000
Netherlands Bank ...	290,000	257,000
Standard Bank ...	2,721,000	2,736,000
Totals	£8,834,000	£8,975,000

The next table gives the aggregates of the two previous statements. It is only necessary to state that the total for December 31, 1909, was £15,245,000:—

	DEC., 1910.	NOV., 1911.
A.B.C.	£1,753,000	£1,943,000
Bank of Africa ...	1,405,000	1,173,000
Natal Bank	1,620,000	1,639,000
National Bank ...	5,470,000	6,745,000
Netherlands Bank ...	488,000	452,000
Standard Bank ...	4,002,000	4,825,000
Totals	£14,738,000	£16,777,000

All advances have been materially augmented during last year—much more so, indeed, that during the two years 1908-10.

Bills, etc., discounted.

	DEC., 1910.	NOV., 1911.
A.B.C.	£26,000	£47,000
Bank of Africa... ...	193,000	262,000
Natal Bank	97,000	121,000
National Bank	616,000	920,000
Netherlands Bank ...	155,000	157,000
Standard Bank ...	548,000	718,000
Totals	£1,635,000	£2,225,000

Overdrafts.

	DEC., 1910.	NOV., 1911.
A.B.C.	£114,000	£162,000
Bank of Africa	97,000	97,000
Natal Bank	215,000	282,000
National Bank	221,000	348,000
Netherlands Bank ...	283,000	276,000
Standard Bank	272,000	843,000
Totals	£1,202,000	£2,008,000

Secured Advances.

	DEC., 1910.	NOV., 1911.
A.B.C.	£362,000	£406,000
Bank of Africa	415,000	433,000
Natal Bank	1,284,000	1,291,000
National Bank	3,128,000	3,196,000
Netherlands Bauk ...	47,000	19,000
Standard Bank	1,607,000	1,943,000
Totals	£6,843,000	£7,288,000
All advances ...	£9,680,000	£11,521,000

* * * *

Developing Mozambique. As showing how, in spite of political fermentations and changes in the personnel of the heads of the local Administration of the Province, the great work of developing the agricultural and other resources of Mozambique is proceeding largely through the agency of adequately capitalised private companies or syndicates, the *Mozambique Gazette* gives details concerning the operations and objects of the enterprise entitled the "African Agricultural Estates Company, Limited." This company was formed quite recently to utilise and develop the concession of, roughly, 100,000 acres of land situated close to Pessene Station, at Kilometre 30, on the Lourenco Marques-Ressano Garcia line of railway, and acquired some little time ago from the Government by Mr. Julius Alston, of Natal, who is now the managing director of the company into which the enterprise has developed, and remains the moving spirit of the whole concern. The nominal capital of the company, which has been registered in Natal, is £70,000, divided into 1,400 shares of £50 each, and Mr. Alston's fellow-directors are Messrs. Thomas Mansfield Mackenzie, William Fortescue Curry, Robert Murray, and Patrick Addison. The Lourenco Marques representative is Mr. M. Barreto. Large irrigations and sugar plantations are contemplated.

* * * *

Natal Trade. The Natal Customs returns for December, as compared with December, 1910, are as follows:—Imports £795,981, a decrease of £156,722; exports £473,249, an increase of £85,231. Coal exported, 126,090 tons, a decrease of 12,557 tons.

The attention of owners and users of machinery is directed to a Government Notice appearing elsewhere in this issue. This states that in terms of the Mines Works and Machinery Regulations 138 and 179, framed under Act No. 12 of 1911, owners and users of machinery are hereby called upon to furnish a return of all machinery erected or in use at the 31st December, 1911.

Advertiser, who has been Sub-Manager for several years of a large Corporation in South Africa, requires a position of trust; experienced bookkeeper; salary no object; would accept any position to commence with.—Apply, "S. L.," c/o *S.A. Mining Journal*, Box 963, Johannesburg.

Johannesburg Motor Garages and Suppliers of Motor Cars, Accessories, etc.

JUST ARRIVED—1912 MODELS

PHŒNIX AND VULCAN CARS

Trial Runs Arranged. Full Particulars from

REED'S GARAGE

GOVERNMENT SQUARE, JOHANNESBURG.

Phone 1434. P.O. Box 2720.

The South African

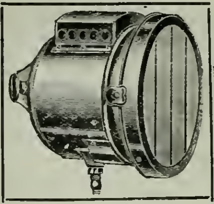
'Mining Journal'

Is the Authority on all Metallurgical Subjects, and is at once a - - - -

Newspaper and a Review.

- - Write for Specimen Copy. - -

ADVERTISEMENT RATES ON APPLICATION



Lamps. Petrol. Oil.
Wind Screens. Speedometers. Horns.
Keystone Grease. Motor Tools. Whistles.
Gabriel Horns. Bowden Air Controls, and

EVERY DESCRIPTION OF ACCESSORY FOR A CAR.

Write for Illustrated List.
Wholesale and Retail :: ::

S.A. Motor Industries

Winchester House, Main Street,
JOHANNESBURG.

BOX 3673. 'PHONE 4083.

If its COMFORT and RELIABILITY you want,

—RIDE A—

BAT

MOTOR CYCLE

3½ H.P. £65.
6 H.P. £78 10s.
8 H.P. £82

AGENTS FOR:

Indian-Scott, Bat, New Hudson, Moto-Reve, Hazel Motors.

Send for FREE List

WILLIAMS, HUNT & CO.,

129, Commissioner Street, & Von Brandis Square.

Box 2437. 'Phone 3039.

First and Fastest "Hill Climbs" 1910.

First and Fastest "Hill Climbs" 1911.

VAUXHALL CARS.

Sole Agents:

T. B. ADAIR & CO.,

67, Kotze Street,
HILLBROW,
JOHANNESBURG.

Phone 2570.
P.O. Box 1940.

Automobile Notes.

A Review of the Year.

We wish motorists everywhere a prosperous New Year. In a brief review of the past year one, first of all, is impressed with the progress which has marked the industry in 1911. Despite untoward circumstances, often referred to, the industry has gone forward in a way rarely equalled in modern times. Naturally, much has been expected of the motor trade in England and elsewhere in regard to progress where conditions favour; but, on the other hand, South Africa, contending with many climatic vicissitudes, the advance of the industry would in the ordinary way be expected to progress slowly. Instead, one finds an industry which, as regards actual growth in a specified time, eclipses all others, and promises, under altered conditions which must eventuate, as the country progresses, to become one of the greatest of the country's industries.

A British Car.

A 15·9 Vauxhall has succeeded in breaking all records on the Brooklands track. The performance has aroused general surprise, the record being particularly gratifying from the point of view of the British manufacturer. The action of the Vauxhall Company in building a 15·9 engine, although a departure from standard practice, is by no means a sign of changing opinion in regard to the 90 m/m bore engine. On the contrary, they still hold that to be the smallest engine entirely suitable for road service, and this opinion gains strength from their new position as holders of the 15·9 records. Summed up, the modern demand is for a roomy and comfortable body, and experience has taught the company that nothing smaller than a 90 bore engine will carry this satisfactorily. It is because of this experience that they advocate the famous 20 h.p. Vauxhall, and not because they cannot speak out of actual knowledge in regard to the capabilities of small engines. The Vauxhall undoubtedly stands out clearly, from among its competitors, as the one car possessing those qualities which are essential if a motor carriage is to attain the highest standard of luxury. Those, therefore, seeking the ideal motor carriage will find a complete realisation of their desires in the up-to-date Vauxhall.

Vauxhall performance.	Previous records.
91. 5. M.P.H. 10 laps	81· M.P.H.
94. 7. M.P.H. flying mile	86·37 M.P.H.
96. 4. M.P.H. flying kilometre	88·24 M.P.H.
97. 3. M.P.H. flying half mile	90·04 M.P.H.

It is interesting to remark that some twelve 20 h.p. Vauxhall cars are running at the present time in Johannesburg, and a large number are on order, of the local agents, mostly bespoke, however.

Increase of Motoring.

An American writer states that with the increase of motoring amongst the public, and its almost general adoption by the medical profession, the average yearly earnings of the doctors have increased. The latter finds the motor car indispensable. It enables him to cover a district which he could not otherwise deal with, and without it his practice is encroached on by other medical men who have adopted this up-to-date means of progression. It is suggested, therefore, that the decrease in the yearly takings may be due to the improved health of the community, resulting from such an extensive adoption of motoring. It is from the middle and upper classes that the medical men draw the greater portion of their income, and it is just these classes whose health has been improved by the new vehicle, whether used as a pastime or solely as a means of progression.

Behaviour in Accidents.

Some little time ago the London daily newspapers appeared with the details of another motor accident, in which the car-driver—in this case the machine was a taxi-cab—having run into a pedestrian, drove away without stopping to ascertain the extent of the damage or to offer assistance. The published facts reflected the greatest discredit upon the motorist, who was, quite justly, reviled throughout the Press. In this instance there was practically no doubt that the motor driver was aware of the collision, and he therefore cannot be too strongly condemned; but at the same time it should be put on record that the "run-away" motorist is not invariably the villain he is made out to be. It is easy to imagine circumstances in which a car driver

CONTINENTAL
THE WORLD'S LEADING TYRES.

FOR MOTOR CARS:
The Extra Heavy Square Tread Tyre;
The Tropical Renforcé Three Ribbed Tyre;
The Black Red Steel Studded, as used exclusively during the "Prince Henry Trophy" Race.
FOR MOTOR CYCLES:
The Extra Heavy Tyre, Ribbed Pattern;
The Rubber Studded, Non Slipping Tyre.

N.B.—All our Tyres are specially manufactured by our Home Company to suit the South African Climate and Roads, and stand UNSURPASSED in Quality.

STOCKS OBTAINABLE THROUGHOUT SOUTH AFRICA.

might collide with another road user—more particularly a cyclist—cause him to fall from his machine, and leave him lying injured in the road without himself having the smallest suspicion that any collision had taken place.

A Dream Come True.

A few years ago the process of liquefying natural gas was a subject for laboratory investigation; to-day it is being carried out upon a commercial scale in many parts of America notably in the Pennsylvanian fields—but recently its manufacture has been commenced upon a large scale in the oil fields of California. To what extent this system of producing gasolene or motor spirit will extend in the near future it would be difficult to attempt to prophesy, but the fact that thousands of gallons are now being daily manufactured from natural gas suggests that this branch of light oil production will in time become very important. To-day, in the Californian fields, millions of cubic feet of natural gas are going to waste, the gas coming from the Union Oil Company's wells alone being estimated at 10,000,000 cubic feet daily.

The New Daimler Engine.

Since the introduction of the new Daimler engine, the company have been honoured with orders for more than 7,000 cars, amongst the purchasers being: His Majesty the King, His late Majesty King Edward VII., H.M. the Queen, Her Majesty Queen Alexandra, H.I.M. the Czar, H.I.M. Empress Dowager of Russia, H.M. the King of Spain. Needless to remark, the "Daimler" occupies a no mean place in South African popularity, and on sheer merit is practically incomparable.

Colonial Requirements.

The Motor to hand says:—"The requirements of those who are living in undeveloped countries, chiefly the British Colonies and Possessions, are being catered for by all the leading motor manufacturers of the world. The exact proportion in which the business is divided is not so well known as it might be, and statistics taken from the Blue Books must be read with local knowledge, if they are thoroughly to be understood, for it does not follow that the figures for one year will be in the same proportion the next, or that a large importation means an immediate sale. The colonials visiting Great Britain, and those who are at home, are fully alive to their respective requirements, and make known their complaints through the correspondence columns. Perhaps a little more confidence on their part would put the builders of chassis and motor carriages in possession of the date of delivery, the year in which these motor carriages were built, of which they complain."

Contracts Open

The Secretary to the Tender Board, S.A.R. Headquarter Offices, Johannesburg, invites tenders for the Supply of Structural Steelwork, etc., required for New Stores and Carriage Shed at Braamfontein (Feb. 6).

The Municipality of Parys, O.F.S., invites tenders for Electric Lighting Contract (Jan. 10).

The Municipal Council of Johannesburg invites tenders for the Supply of Sun Blinds (Jan. 13); Horse Shoe Bar Iron, Horse Shoe Nails, Rasps and Files (Feb. 23).

Contracts Placed.

The following tenders have been accepted for the services mentioned, viz:—Messrs. Murdoch and Co., £2,368; erection of two cottages, Bacteriological Laboratory, Onderstepoort, Pretoria. Messrs. Wm. Hosken and Co., Government Square, Johannesburg, for supply of postmen's boots for period July, 1911, to 31st March, 1914. Messrs. Gilbert Hamer and Co., Johannesburg, £720; for 1,000 steel private letter boxes for Post Office.

Notice to English Advertisers and Subscribers.

NOTICE is hereby given that Mr. G. LEIGHTON HARE, of London Wall, E.C., has been appointed the Sole Manager in the United Kingdom of this "Journal," to whom all correspondence in connection with business affairs of the paper should be addressed.

No contracts given to canvassers for advertisements become binding on the "Journal" until they have been duly confirmed by Mr. G. Leighton Hare, neither will any receipts for money paid on behalf of such contracts be recognised unless signed by him. Any similar authority granted to any person or persons previous to this notice is hereby cancelled.

By order.

Notice to Advertisers and Subscribers.

NOTICE is hereby given that Mr. C. G. GALL'S connection with this "Journal" as Canvasser, ceases and terminates as and from the 31st December, 1911.

By order.

The Messina (Transvaal) Development Company, Limited.

DIRECTORS' REPORT.

The Directors have pleasure in submitting herewith their Sixth Annual Report, and audited Statement of Accounts, for the year ended 30th June, 1911.

PROPERTY.—The property consists of the freehold and leasehold farms detailed in the Consulting Engineer's Report, representing a total of 22,432 acres, standing in the Company's books at a cost of £141,671, and 200 coal claims situated about 15 miles South West of Messina.

DEVELOPMENT.—It was stated in the last Annual Report that as a result of favourable developments your Directors had every confidence in the future of the Mine at depth, and had authorised the sinking of a new three-compartment Shaft to 800 feet. This work was completed during the past year and the North Lode encountered at 650 feet, and exposed to the bottom of the Shaft at 818 feet. At this depth the lode is 27 feet wide, and the average assay value 17 per cent. copper. In regard to this development the Consulting Engineer states :—"The occurrence of massive mineralisation at this depth indicates that the Bonanza Ore Shoot, the best ore carrier in the upper levels, is continuous in depth, and the intervening section of lode to be developed between fourth and eighth Levels can safely be reckoned upon to maintain average width and value. There is appreciable evidence that this important ore shoot will be found persistent to a much greater depth. It is impossible to state at what depth a change in the grade of ore may be expected, as at present there are no indications to suggest any alteration of the mineralisation."

The development of the other portions of the Mine has been satisfactory and shows that an average grade of 10 per cent. copper is maintained throughout. Development of the North Lode between Nos. 7 and 9 Shafts has been a specially gratifying feature, several fine ore shoots containing high grade copper glance and bornite having been exposed.

The North Lode has now been opened by continuous drives for a linear distance of 1,500 feet, the South Lode for a linear distance of 1,015 feet, and the Middle Lode for 570 feet.

The development on the extension of the ore bodies to the east and west on these lodes should add a large tonnage to the known reserves.

ORE RESERVES.—The estimated ore reserves at 30th June, blocked out within the developed sections, amount to approximately 102,000 tons of 10 per cent. copper, an increase of 12,000 tons, after allowing for the extraction of 17,286 tons during the year. The striking of the lode at 800 feet in No. 4 Shaft largely increases the estimate of probable ore. The estimate of positive and probable ore is 430,000 tons of 10 per cent. ore, as follows :—

North and Middle Lodes—	Tons.
Ore reserves above 4th Level and at 8th Level (No. 4 Shaft)	102,000
Probable ore above 4th Level	25,000
Probable ore from 4th to 8th Levels	240,000
South Lode—	
Probable ore to 4th Level (No. 1 and No. 3 Shafts)	63,000
Total	430,000

In view of the completion, at an early date, of the Railway now under construction, the operations at the Mill will, for the present, be limited to treating ore obtained from development, and efforts will be concentrated on increasing the reserves of ore by opening up the mine as rapidly as possible so as to be in a position to at once undertake a large output on the advent of the Railway.

It is proposed to increase the existing Mill by adding further units up to a capacity of 8,000 tons per month. The issue of £250,000 of Debenture Stock, as authorised by the Special Meeting held 3rd July, has been successfully placed and the Company is therefore in a strong financial position, with ample funds for the erection of a large and up-to-date Mill and for the prosecution of necessary developments.

RAILWAY.—The extension of the Pretoria-Pietersburg Line to Bandolier Kop has now been opened for traffic, which has developed so rapidly that the Government have already found it necessary to increase the number of trains per week.

The construction of the continuation of the line to Messina is being actively carried on by the Government and the Railway should reach the Messina Mine towards the end of next year.

COAL.—An important discovery of coal has been made and opened up, about 15 miles South West of Messina, and a large coal bearing area located and pegged. The Company has acquired an option over the whole of this area. A practical steaming test has been carried out at the Mine and has given satisfactory results. The importance of a large and satisfactory coal field within a few miles of the Messina Mines can hardly be overestimated.

SMELTING.—When the Railway reaches the Mine the Company will be in a position to ship a large output of concentrates of approximately 40 per cent. copper. It will then be a matter for discussion as to whether profits can be further increased by smelting these concentrates into a matte or into blister copper at the Mine. The recent discovery of coal in the vicinity of the Mines has favourably affected this question.

Messrs. Huntington, Heberlein and Co. have made a report on the smelting of Messina ores, in which they state that the ore presents no difficulty in treatment, and can be successfully smelted in either blast or reverberatory furnace, the ore being especially suitable for the latter.

In accordance with the Articles of Association, Mr. John S. P. Samborne retires from the Board, and being eligible, offers himself for re-election.

The Auditors, Messrs. Allen, Biggs and Co. also retire, and offer themselves for re-election

By Order of the Board,
WM. J. CHALLIS, Secretary.

6, Princes Street, London, E.C.
22nd November, 1911.

Dr. Profit and Loss Account for the Year ended 30th June, 1911. Cr.

Dr.			Cr.	
To Johannesburg and Mine Expenses—			By Ore Realisation Account	£57,049 12 5
Mining, Freight and Transport...	£35,983 5 1		,, Transfer Fees	32 5 0
Development Redemption	4,643 5 0			
Depreciation on Machinery, Plant, etc.	1,900 9 7			
Insurance and Farm Taxes	408 4 10			
Boundary Beacons	186 11 10			
Agents' Salary & Local Board Fees	780 0 0			
General Charges, Cables, Postage, Stationery, Printing, etc.	697 5 8			
Audit Fee	52 10 0			
Exchange and Commission	1,086 16 6			
		£45,738 8 6		
,, London Expenditure—				
Directors' and Trustees' Fees ...	1,500 0 0			
Salaries and Rent	760 5 0			
Travelling Expenses...	79 0 0			
General Charges, Cables, Postage, Stationery, Printing and Advertising...	1,147 11 1			
Interest and Commission	5,774 4 7			
Audit Fee	21 0 0			
		9,282 0 8		
,, Balance carried down		2,061 8 3		
		£57,081 17 5		£57,081 17 5
To Interest on Debenture Stock		£4,045 4 8	By Balance brought down	£2,061 8 3
,, Insurance Premium for Redemption of Debenture Stock		3,560 1 8	,, Balance carried to Balance Sheet	5,543 18 1
		£7,605 6 4		£7,605 6 4

The Messina (Transvaal) Development Company, Limited.—continued.

Dr. BALANCE SHEET, 30th June, 1911. Cr.

To Capital—			
200,000 Shares of £1 each		£200,000 0 0	
165,451 Shares issued...			£165,451 0 0
34,549 Shares unissued.			
200,000			
,, Six per cent. Debenture Stock—			
Authorised		150,000 0 0	
Amount issued at June 30, 1910...		117,840 0 0	
Less Exchanged into fully-paid shares	£63,627 10 0		
Paid off...	2 10 0		
		63.630 0 0	
		54,210 0 0	
Issued as Security for Advances...		45,117 0 0	
			9,093 0 0
,, Share Premium Account			41,865 13 2
,, Reserve for Redemption of Debenture Stock			12,038 3 8
,, Bills Payable			15,000 0 0
,, Sundry Creditors—			
South Africa		46,218 16 1	
London		3,189 0 8	
			49,407 16 9
,, Overdrafts at Bankers			50,387 13 3
			£343,243 6 10

By Mining Property—		
As per last Balance Sheet		£141,671 15 5
,, Prospecting—		
As per last Balance Sheet	£18.153 2 4	
Add Expenditure during year ...	127 18 0	
		18,281 0 4
,, Mine Development	26.602 5 1	
,, Sinking Shafts...	27,879 9 7	
		54,481 14 8
,, Buildings, Machinery, Plant, etc.	28.585 4 5	
,, Live Stock, Vehicles, Tools, etc.	1.601 10 7	
		30,186 15 0
,, Ore in Transit and on Hand		19,818 1 3
,, Ore Untreated, including Tailings and Slimes		18,523 15 0
,, Stores on Hand		4,872 2 3
,, Sundry Debtors and Payments in Advance		757 11 7
,, Railway Account		13,508 3 10
,, Debenture Stock Redemption—		
Premium Account, as per contra	12,038 3 8	
Premium paid in advance...	1.780 0 10	
		13.818 4 6
,, Cash at Bankers and in Hand ...		971 8 11
,, Profit and Loss Account—		
As at 30th June, 1910	20.808 16 0	
Balance as per account annexed...	5.543 18 1	
		26.352 14 1
		£343.243 6 10

WM. J. CHALLIS, Secretary.

A. M. GRENFELL.
R. J. FRECHEVILLE, Directors.

We beg to report that we have audited the Balance Sheet of the Messina (Transvaal) Development Co., Ltd., dated the 30th June, 1911, and above set forth, in which is incorporated the South African Balance Sheet certified by the Local Auditors. We have obtained all the information and explanations we have required.

In our opinion such Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Company's affairs according to the best of our information and the explanations given us and as shown by the Books of the Company in London, and the certified Balance Sheet from South Africa.

147, Leadenhall Street, E.C.
21st November, 1911.

ALLEN, BIGGS & Co.,
Chartered Accountants, Auditors.

The Book that is being Talked About.

Faults and Dykes

BY J. S. OLVER,

PRICE 21/-

"The Star" says:—"Will be accepted as a standard work on the subject and find a place in the Library of every mining man."

"South African Mining Journal" says:—"Mr. Olver discusses problems which occur to those actually engaged in Mining on the Rand and deals with conditions that prevail locally."

"Evening Chronicle" says:—"We hope there will be much discussion and some new convictions as a result of the work."

J. C. JUTA & CO.,

43, PRITCHARD STREET.

And from all Booksellers.

Tents, Sails, Camp Outfitting & Farmers' Goods

(All Goods Offered Subject to Being Unsold.)

E.P. TENTS, size 16 x 20, outer roof three ply, inner roof, two ply, walls three ply stayed with bamboo poles. I turn out these tents almost equal to the original, which is made in India, and costs £75 new. My price for these, thoroughly overhauled, and complete, second-hand, £17 10s. to £25 each. Bell tents, second-hand, full-sized, thoroughly overhauled and complete with pegs, pole, and mallet, 50s. each. Also every other class of tent can be had at my usual cut prices.

COLLAPSIBLE CAMP FURNITURE.—Folding brown canvas beds, 16/6 each. Green canvas beds, better class, 30/- each. Very strong stools, 2/6 and 5/ Chairs, 10/6, 12/6 and 15/-. Indian Rhookee Chairs, 31/6 each. Military Lounge Chairs, 25/- each. Military Haversacks, 1/- each. "X" Tables, 16/6 to 23/6 each. Canvas Bath and Basin combined, 25/- to 33/6 each.

DRILL CABLE.—Well-known Blue Strand, 1¾in. in 300ft. coils, 10d. and 1/- per foot.

WRITE, CALL OR 'PHONE FOR LISTS.

S. B. WITHEROW

92, FOX STREET (OFF ELOFF STREET).
Box 1990. JOHANNESBURG. 'Phone 2417.

VISIT OF OIL EXPERT.

MR. THOMAS DRAPER, A.M.I.M.M., (Late Oil Geologist to the Shell Transport and Trading Company operating in East Borneo), will pass through South Africa on his way to Madagascar, in the early part of next year, and will be prepared to inspect and report on any Oil Properties in this country.

Communications from those wishing to take advantage of his visit must be addressed to

MR. DAVID DRAPER,
Goldfields Hotel, Johannesburg.

THE SOUTH AFRICAN
Mining Journal,
WITH WHICH IS INCORPORATED
The South African Mines, Commerce and Industries.
ESTABLISHED 1891.

VOL. IX., PART II.] JANUARY 13, 1912. [No. 462.

HEAD OFFICE: 119-126 Exploration Building (3rd Floor).
Telephone **913.** P.O. Boxes **963** and **418.**
Cable and Telegraphic Address: **"MINING JOURNAL."**

MANAGER FOR GREAT BRITAIN: G. Leighton Hare, 119-120 London Wall, London, E.C., to whom all communications must be addressed.

GERMAN AGENTS: Dean-Mayer Co., Linkstrasse 39, Berlin, W., 9.; Rudolf Mosse, Jerusalemer Strasse, 46-49 Berlin, S.W. 19; H. C. Wolff, Residenzplatz, M. 85, Kempten, Bavaria.

AMERICAN AGENTS: National Advertising Co., 4th Floor, Quincy Buildings, Denver, Col.

Copies of this journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all Newsagents and Railway Bookstalls throughout South Africa, and at the London office as above.

NOTICE.—The postage of this issue of the *S.A. Mining Journal* is: South Africa, 1d. All other parts, 2d.

CONTENTS.

PAGE
Notes and News... 667
Topics of the Week:
Our Twenty-first Anniversary Number ... 669
The Output for 1911 ... 670
Phthisis ... 670
The Geology of the Witwatersrand ... 671
Rooiberg Tins in 1911 ... 674
Mines of the Witwatersrand: Meyer & Charlton G.M. 675
Klerksdorp Mining Activity ... 677
Pilgrims Rest Mining and Railway Communication ... 678
"S.A.M.J." Anniversary Number ... 679
Mining Men and Matters ... 679
Correspondence and Discussion: "Victoria Gold Mines, Ltd.," "Kohinoor Diamonds," "Rand Geology," "Rand Company Meetings," "Annual Meetings in London" ... 680
The Gold Output for December and 1911 ... 681
Rhodesian Section:
News from the North... 685
Charterland Mining News ... 686
Cascade Motors for Mine Haulage ... 689
The Week in the Sharemarket... 691
Engineering Notes and News ... 693
Commerce and Industries ... 695
Automobile Notes ... 699
Index to Advertisers.

Notes and News.

Witwatersrand Geology. In another part of this issue a summary of Dr. Mellor's investigations to date on the geology of the Lower Witwatersrand series is given. In a later issue his theory with regard to the fault movements and their results will be dealt with in greater detail. We learn that he has in preparation an appendix to his paper, in which the localities are mentioned where the more important features and sections of the system are well in evidence. This information should prove of considerable value to those who are in any way interested in the study of the Witwatersrand formation, either on the Central Rand or in the outside districts.

* * * *

The Alluvial Diamond Diggings. After a fairly lengthy and exhaustive trial of the new alluvial diggings in the Bloemhof district, the verdict seems to be that they are a failure. Judging from the average finds, they cannot compare with the older diggings in the Barkly West neighbourhood, and when one takes into consideration the discomfort and unhealthy conditions which prevail in the more recently opened fields, the difference between the two districts becomes still more emphasised. There are said to be some 5,000 registered diggers on Mooifontein, and these, with their wives, children, and employees, make up a huge population, which must, by all accounts, be living on the borders of starvation. Diamond buyers and storekeepers are doubtless reaping a good harvest, but the day is imminent when it will be necessary for most of the diggers and their dependents to look for some other means of living. Will the Government be prepared to afford any assistance? The circumstances connected with these rushes begin to draw attention to the fact that Bloemhof has attracted large numbers of people to their own undoing on previous occasions.

* * * *

Koffyfontein Mines. Progress is exhibited by the report of the Koffyfontein Mines. The net profit amounted to £50,300, as against £49,000 in the year ended 30th June, 1910, although the depreciation allocation was increased from £16,000 to nearly £20,000; an additional 271,400 loads were washed, and the yield averaged 5·44 carats per 100 loads, in contrast with 4·89, with the result that the recovery of diamonds totalled 115,800 carats, as against 90,800 carats. The company, by the way, follows the somewhat unusual course of taking credit for blue ground in its revenue account. The number of loads on the floors at the 30th June last was 1,278,000, an increase of 270,000 loads. Distribution of the 15 per cent. on account of 1909-10—permitted by the reversal of a legal decision—was made in May, and called for £40,500. Payment of 10 per cent. on the increased capital requires £31,000, leaving £27,300 to be carried forward. The full capacity of the new washing gear is about 3,000,000 tons per annum, working day and night. This being obviously in excess of the position as to blue ground, it is not surprising to read that in consequence of the scarcity of labour and decrease in the number of loads of blue ground on the floors, night washing had to be stopped in October, and is not to be resumed until there are 2,000,000 loads available. At the meeting the election to the Board of the three representatives of the De Beers Company was confirmed.

* * * *

The London Diamond Co. We learn that at least three large blocks of alluvial claims have been taken up on the farm London, in the Bloemhof district. In each case the area acquired amounts to 1,000 claims, and operations will be carried out on a large scale. It is understood that Sir Thos. Cullinan is one of those who intend giving London a thorough trial. He has taken up 1,000 claims, and will have Mr. Minnett Frames in charge of operations. In connection with the other areas, the names of well-known Transvaal mining men are mentioned, but we are not at this juncture entitled to mention them. A further portion of the farm will, so we understand, be proclaimed very shortly.

* * * *

Pniel Diamonds.

Recent reports of yellow ground discoveries on the Pniel Estate have been confirmed by Mr. B. Aaron, who visited the Rand last week, bringing with him several specimens of kimberlite. Mr. Aaron states that he has opened up not one but several "likely" prospects, from which handwashing has returned diamonds. These prospects are being vigorously opened up, and a test wash on an adequate scale will shortly be made. The property, it will be remembered, is a very large one, carrying an alluvial deposit that, despite the attractions of the newer fields, continues to yield a satisfactory return.

* * * *

Hayes Reynolds.

The shares of Hayes Reynolds Universal Printing Company, which touched £5 during the week, have been providing interest in an otherwise deadly dull market. It will be remembered that the company was floated locally to exploit a new colour printing process. During the week a cable received from the Hayes Universal Printing Company stated: "The negotiations previously mentioned advanced a further step last week. The prospects are good, but the investigation is very thorough, and has been proceeding since July. Other negotiations affecting three foreign countries are proceeding. A powerful group is concerned, and if an agreement is reached large amounts will be involved. The chances seem encouraging, but it is too early to venture any prediction. The great importance of all these negotiations demands utmost care and patience. Everybody concerned is confident shareholders will appreciate this. Meanwhile the proceeds of the reserve shares have been increased to £10,000 by further issues at seventy, eighty and ninety shillings."

* * * *

Consulting Engineers.

Yet another new body has been formed in the engineering world. The object of this latest association is to provide a list of consulting engineers to which local authorities or others desiring independent advice could refer if necessary. At first glance, the further multiplication of engineering associations seems unnecessary, for it is already possible for a member of the profession to sport such an alphabetical collection as M.I.C.E., M.I.E.E., M.I.M.E. But there seems no doubt that the new body will in reality serve a useful purpose by designating those members of the profession who act exclusively in a consulting capacity, and are not in any way connected with any contracting or manufacturing firm. It would certainly be of advantage, no less to the general public than to the consulting engineer, that it should be recognised that he is entirely free from commercial ties, and thus able to act in a purely consultative and confidential capacity to his clients.

* * * *

The "Stobie" Patent Respirator.

A new respirator has come into the field, which promises to become an important factor as a palliative of the dust evil. This respirator, which is a local invention, was designed, after experiments and trials had been carried on, by Mrs. K. B. Stobie, for over four years. The husband of the inventor is a miner on these fields, and in the first instance the respirator was made only for private use by Mrs. Stobie, as her husband was dissatisfied with the other kinds. The features of the "Stobie" respirator are adaptability to any contour of face, its pliability and lightness, and the use of flannel as a filtering medium. The respirator has been most favourably reported upon by Dr. Macaulay, and already has come into very general use on some of the largest mines. As the "Stobie" respirator is being sold wholesale to the companies at the rate of one shilling each, this is a respirator which it may possibly repay the companies to issue largely to natives. We understand that a mechanical and scientific test of this respirator, made by competent authorities, has proved a very high standard of efficiency.

Anglo-German Tins.

During the week His Excellency the Governor-General paid a visit to the offices of the Anglo-German Tins, Ltd., in order to inspect the unique cassiterite specimens from the property on view. Readers who may be interested will find a representative collection of picked specimens on exhibition in the general office of the Standard Bank, Commissioner Street.

* * * *

S.A. Tin Exports to the United Kingdom.

In the eleven months to the end of November, 1910, and for the same period of 1911, the value of tin ore imported into the United Kingdom from South Africa was distributed as follows:—Transvaal, 1910, £243,657; 1911, £205,516; Swaziland, 1910, £27,582; 1911, £120,142; Rhodesia, 1910, £60; 1911, —; Cape, 1910, £5,608; 1911, £538. The only increase is in the case of Swaziland, and it will be noted that the Rhodesian tin discoveries have not resulted in anything tangible in the way of shipments during last year. It may be added that the Transvaal comes third on the list of countries which ship tin ore to the United Kingdom. The quantity sent from Chili during the eleven months of 1911 was valued at £271,083, and that from Bolivia at £1,239,683.

* * * *

The Benoni Plant.

Rumour has been particularly busy during the last few days with regard to the Way-Arbuckle plant at Benoni. The information we have received officially hitherto has been to the effect that certain adjustments, of a kind that suggest themselves during the progress of operations and such as can be made at no great cost, are required to place the installation in satisfactory running order. These adjustments do not appear to have been completely made as yet, although a fairly long preliminary run has been obtained, and it is not improbable that the worst construction is being placed by the public on the delay. We understand that a statement about the position is to be published by the board at an early moment, and gather that the consulting engineer does not by any means share the prevailing anxiety with regard to the plant.

* * * *

Benoni.

At the moment of going to press the following has been received:—"During the month of December 14,660 tons were crushed of an average grade of 6·56 dwts., while in November 6,123 tons were put through the mill only. The fine gold recovered amounted to 2,772 ounces of an estimated value of £11,595. In addition to this, allowance must be made for a very large amount of gold absorbed by the plates, extractor boxes and works generally. Owing to the fact that the screws attached to the Arbuckle cones have not effectively elevated the slime which the cones are capable of settling, practically no slime was treated during December, this product being stored. To obviate further delay, the alternative scheme of centrifugal pumps, which were already installed, has been put into operation, and slime is now being elevated to the treatment agitators by this method. The reduction works up to and including the treatment of sands have from the start worked quite satisfactorily. The only difficulty which has been experienced has been in connection with the slimes treatment. As explained above, this has now been overcome, and it is anticipated that in future the whole plant will run smoothly and without stoppage."

* * * *

The "Gold Fields" Medal.

The Institution of Mining and Metallurgy has awarded the Consolidated Gold Fields Medal to Mr. W. R. Dowling for his paper "The Amalgamation of Gold in Banket Ores." By an interesting coincidence, this is the third time the Gold Fields Medal has been won by a member of the staff of that corporation.

Zaaiplaats.

We understand that on Saturday last a consignment of ten truck loads, weighing 109 tons, of tin concentrates from the Zaaiplaats Tin Mining Company's mine was despatched from Potgietersrust Station to Lourenco Marques for shipment to Singapore. This consignment, which forms part of the December output, is one of the largest which has ever left Potgietersrust in one lot. Its value is approximately eleven thousand pounds sterling.

* * * *

The New Steelworks.

The new steelworks at Vereeniging will have as directors the following: Messrs. James Pachett (chairman), chairman Shropshire Iron Company; Frederick Siemens, Westminster, steel manufacturer; J. Stanley Watson, Sheffield (chairman Bruce Steel Works). With them are Mr. Isaac Lewis (Lewis & Marks), Mr. H. A. Herbert (the joint general manager in South Africa for the African Banking Corporation), and, as the Johannesburg Committee, Senator S. Marks and Mr. H. H. Wright, the engineer who found Steelpoort and has worked for years to bring about this undertaking. The capital is £250,000 in 247,500 7 per cent. preferred ordinaries of £1, and 50,000 deferred ordinaries of 1s.; 100,000 of the deferred are being offered for subscription in South Africa, and the lists will open with the publication of the abridged prospectus very soon.

* * * *

The New Zealand Iron Industry.

The Bill to encourage the manufacture of iron and steel from New Zealand ore and iron sand has been circulated. The measure gives authority for the payment of bonuses totalling £66,270 for the production of iron and steel as follows:—For the first 30,000 tons of pig-iron or ingot steel, 20s. per ton; for the first 20,000 tons of bar, rod, angle or other iron or steel, 20s. a ton; for the first 10,000 tons of plate iron or steel, 20s. a ton; for the first 5,000 tons of fencing wire, 25s. a ton. After the expiration of 40 years all plant and other property used by successful manufacturers shall pass, without compensation, to the Government, or the State may at any time after 15 years take over the undertaking, compensation being fixed by the Supreme Court. Other terms provide that a sum of not less than £100,000 must be spent within two years in the production of iron and steel, and not less than an additional sum within four years. If the present lessees of iron ore deposits do not accept within six months the terms offered the Crown may resume the whole of their properties.

* * * *

Miners' Phthisis Commission's Report.

Latest news from West Australia states that the report of the Miners' Phthisis Commission has been presented in the Legislative Assembly. It recommends that miners must be medically examined and pronounced free from tubercular disease or intermediate fibrosis before being employed in or on a mine; that within three months of the passing of the Act every person employed in or on a mine shall be medically examined, and that a similar examination shall be made every six months, and that it be an offence to employ any person not in the possession of a medical certificate. Provision is also made for the isolation and treatment, at the expense of the State, of those suffering from tubercular disease. A miners' claim board is to be created to deal with the claims of men precluded from working in or on a mine, the State to finance the board until a scheme for the employment of men so precluded in mining is matured. A mining insurance trust is proposed to be created, the men working on the mines to contribute one-third, the owners to contribute one-third, and the Government the other third. It is recommended in the appendix that an area of land be reserved for a special settlement for miners who, as a result of medical examination, are to be debarred from following their occupation as miners.

TOPICS OF THE WEEK.

OUR TWENTY-FIRST ANNIVERSARY NUMBER.

THE LAST WORD ON RAND MINING.

To commemorate the twenty-first anniversary of the founding of this journal, a special number, distinct from the ordinary weekly issue, will be published early next May. Fittingly to mark the occasion, the number will contain a comprehensive and concise account of the past history, achievements and present position of every gold mine on the Rand, illustrated and brought down to the latest possible date. It will review the industry generally as well as in its several technical aspects, and will include articles by experts on the chemical, mining and metallurgical progress and problems of the fields. A feature will be made of the personal side of the industry, and a section will be devoted to its technical and administrative leaders, enriched with portraits and other illustrations. Engineering on the Rand in all its phases, electricity, steam and air power will be treated, and the growth and progress of electric power supply will be exhaustively discussed. The gold mines of the outside districts, and the tin, copper and coal industries of those districts will be dealt with thoroughly and at first hand. The great diamond industry of South Africa will have a section to itself, and here, as in the treatment of the base metal industries, the letterpress will be embellished with many striking and original illustrations. Mining in the Cape, Natal and Orange Free State Provinces will also be reviewed and the undoubtedly great mineral potentialities of those, as yet undeveloped, areas will be graphically set forth. German South-West Africa will find a place in the issue and a first-hand account of the diamonds, the copper and the tin mines of that promising field will be included. Moreover, the banks and other great financial institutions, the railways and harbours of the sub-continent will be adequately dealt with, and the whole problem of transportation as it affects the inland industrial centres will be reviewed. In this connection Capetown, Port Elizabeth, Durban, East London, Delagoa Bay and Beira will be separately and fully treated and their claims examined. Apart from mining, there will be a considerable section devoted to a description of the several subsidiary industries dependent on mining for a market. Chief among these will be cement, explosives, soap and candle-making, milling and the hundred and one activities that centre in the Rand. Rhodesia and Mozambique will be given a separate and extended treatment. The different mines will be described and illustrated, and the recent progress of the industry in those territories dealt with comprehensively and lucidly. In addition, the issue will contain a number of interesting and valuable contributions from leading men in the mining and financial world, many of whom have already sent their congratulations on the decision to issue a special commemorative number of the journal. Numerous letters received from past Rand engineers and mine managers, now resident in all parts of the world, contain offers of contributions. These will form a unique collection of valuable views and reminiscences, and will considerably enhance the interest of the volume. The work will consist of upwards of 350 pages, printed throughout on art paper. Prizes are offered to artists for the best design of a suitable and striking character, and particulars are given in another part of this issue of other valuable prizes to be awarded in connection with the number. It may be added that the work will be prepared, produced and printed in South Africa, and it will aim to cover the whole field of mining in this country, and to prove a fitting monument to the great industry with which, from the beginning, the *South African Mining Journal* has been associated. The co-operation of everyone interested in the industry is being enlisted to make the venture a success, and already it promises to mark an advance on anything of its kind ever before attempted in South African illustrated journalism.

THE OUTPUT FOR 1911.

In another part of this issue will be found details of the December output, and some figures relating to the output for the year 1911. From the point of view of production, the year has established a record, and it is gratifying to find that there are, at any rate, no signs of diminution in the available resources of the precious metal. Working costs have increased and profits have diminished, but we are of opinion that these facts do not necessarily indicate a tendency towards progressive deterioration in this respect, but rather a phase in a cycle of events, such as are characteristic of nearly every kind of industrial activity. There are probably few things in the way of mining and reduction practice which can be much improved upon by those who control the operations of the Rand, and, generally speaking, it may be said that the work is carried on efficiently and honestly. What has yet to be learnt is the art of adjusting the scale of operations to varying economic conditions. The field for improvement in this direction is a wide one, and it appears to us that a reconsideration of the whole question of mining policy on the Rand would be productive of excellent results. Although, from the speculative point of view, the returns of the past year have not been as good as was desired, the quantity of gold obtained and the vast sum of money put into circulation in the process of recovering the metal cannot but impress those who make a study of political and industrial economics. Whether the country is deriving the fullest benefit from this source of prosperity is a debatable matter. If it is not, the blame must surely lie upon those whose duty it is to facilitate the activities of the people and utilise the resources of the State in the best possible way.

PHTHISIS.

The Committee of Rand Engineers, under the presidency of Mr. R. N. Kotze, to deal with practical measures to fight the phthisis evil, has no light task before it. The matter is so important, and the position to be revealed by the reports to be presented to the Union Parliament so serious, that no apology is needed for returning to it. The new Committee, we are glad to learn, is amply provided with funds by the industry and the Government to secure reform in several directions, though its chief function would seem to consist in causing all the groups to co-operate in the good work. It appears that real hindrance to progress has arisen from the fact that those mines that did insist on the observance of regulations to prevent the disease were invariably penalised by the defection of the best men, who promptly betook themselves to those properties where greater laxity was allowed. If the new body did nothing more than check this tendency, its existence would be justified. According to the Cape papers, Dr. Aymard persists in accusing the Rand houses of want of sincerity in dealing with the evil. The full report of Mr. Stuart Martin's reply to Dr. Aymard, at the last meeting of the Institution of Engineers, is now available, and some of the facts mentioned by Mr. Martin may advantageously be repeated at this juncture. At that meeting he said that before indulging in criticism, some little more care should be taken in looking right into the heart of what the engineers were doing. Personal agitation and writing to the press by those wrongly informed would do far more harm than good. He could tell them that during the short period that he had been on these fields, an enormous amount of work had been done in trying to prevent this scourge, but whatever had been done, and whatever money was spent, they were not going to see a reduction in phthisis until the preventive measures adopted were successfully carried out, and the disease more or less eliminated. The benefits to be derived from the work for the last two or three years, and the work they were going to put in, and were actually putting in, were not going to come directly, that is, in a month or two. They were going to come in two or three years' time, probably later. He did not want them to think he had the slightest feeling against Dr. Aymard because he had written to the papers and referred to him personally. He did not mind it one rap, because he knew that, as far as he could, and as far as his brother engineers could, they were doing their level best to stop this scourge, and they were really doing some good work, but there was still a great deal more to be done. To the ordinary layman it might appear that nothing was being done, seeing that the miners were dying as rapidly now as they had done in the past, and their interpretation might be that they were going to die just as fast in the future. He would like to tell them one or two things that had been done. One of the first things tackled was the proper ventilation of the mines under the control of his group. They started first of all by tackling the worst mine they had, that was the Village Deep. There a large fan, mechanically driven, had been erected underground, and that mine to-day was one of the best ventilated mines, not only in this country, but in any country they may like to go to. The result had undoubtedly been that the health of the miners was very much improved. The efficiency of the work done was also very much improved, and by ventilating the Village Deep they had incidentally ventilated the adjoining mine—the Village Main Reef. The improvement there had been enormous, although in the first instance a great deal of grumbling took place amongst certain of the miners, because they did not understand that it took a little time for a mechanical ventilator to ventilate two huge mines and lower the temperature without undue condensation for a short period, which naturally did take place in the upper workings of the Village Main. To-day they could go down to the bottom of the Village Main shaft and find an absolutely clear atmosphere—far clearer than was in that room that night. The Village Main to-day throughout the connected ways was a well-ventilated mine. The whole of the water system had been reorganised on the Village Deep quite recently, and new pipes had been laid from top to bottom. Water was laid on to every development face, and every stope, and every dead-end. Similar work had been done on the west side of the Crown Mines, where a large fan had been erected and was ventilating the whole of that section. A scheme had been prepared for the better ventilation, better concentration of work, and better system of watering. A fan had been installed at the City Deep with beneficial results; and arrangements made for the installation of a fan at the City and Suburban Mine. There was a ventilating fan at work in the Robinson Mine, and two mechanical ventilators had been installed at the Nourse Mines. A ventilating fan had also been installed in the Glen section of the Rose Deep Mine, and other groups had also improved the ventilation of their mines. Going further east to the New Modderfontein, the evidence there shows that much has been done towards improving the health conditions of the workmen underground. With regard to the Modderfontein B., that mine has been laid out from the beginning on plans for improved health and better mining conditions, and it had been opened out on a modification of the inverted cone system. Then on the West Rand, they had the Durban Deep. That mine had also got a programme and a policy which would be completed within the next two years, including the introduction of better mining and health conditions. A mechanical ventilator had been ordered, and would be installed as soon as certain connections had been made. Notwithstanding all this, they would find people who did not realise what the Corner House was trying to do, and what they were going to do, and who had tried to lead the public to believe that the big houses were doing nothing. If anyone present felt that he was trying to bluff them, or telling them what was not true, he was prepared to take any one of the members and show what they were actually doing and what was going to be done, and after such an inspection they would be bound to agree with him that something was really being done. In making these remarks he did so for the benefit of the members, and he did not want them to be taken as a direct reply to the criticisms and discussions which had appeared in the daily press during the last two or three months. Despite this, however, it will be seen that Mr. Martin's facts do furnish a very good reply to the criticisms in question.

THE GEOLOGY OF THE WITWATERSRAND.

The Normal Section of the Lower Witwatersrand System—Its Connection with West Rand Sections—Classification and Nomenclature.

In our last issue we reproduced two sections of the Lower Witwatersrand System, the details and data of which were taken from an important paper by Dr. Mellor, of the Geological Survey Department, which is now in course of publication by the Geological Society of South Africa. It was explained that the Witpoortje Section was an accurate representation of the succession and thickness of the various beds found about one-third mile east of the gorge, while the composite section was made up of portions of the system selected from different points along the northern Witwatersrand, in each of which the portion selected appeared to have its fullest and best defined development. The result is an ideal section, which comprises all the known beds and groups of beds in the lower Witwatersrand system in their proper horizon, and which may be taken as a standard for comparison with actually existing sections taken across any particular line of country on the Central and West Rand. The importance and value of such a standard will be obvious to anyone who understands, as Dr. Mellor says, " to what extent the normal sequence of beds must necessarily form the basis of prospecting for auriferous horizons in new localities." In the very earliest days of the Rand attempts were made to obtain reliable information with regard to the relationship existing between the various beds of the Witwatersrand formation, and certain beds with easily recognised characteristics were soon singled out as " markers " in the series. A section in the immediate neighbourhood of Johannesburg which contained these " markers " was taken as normal, and to this day that particular section has usually been referred to for purposes of comparison by those who are carrying on exploratory geological work in outside districts. The section given in Dr. Molengraaff's " Geology of the Transvaal " is a fairly complete representation of the standard referred to. In the same work are to be found a Witpoortje section, and it is described as a variation of that of the Central Rand; and so with other observers. The prevalent idea with regard to the differences shown in the number, character, and thickness of the beds comprised in the lower Witwatersrand system, at one point or another, seems to have been that they were due to local variation. To take the West Rand successions, for instance, the general opinion has been that the rapid increase in thickness of the Lower Witwatersrand System, as one goes westwards from Johannesburg, is a consequence of the original conditions of deposition, and that at various horizons great bodies of sedimentary rock appear which have no representatives in adjacent areas. No one seems to have conceived the idea that all these differences have been due to any great extent, or even at all, to faulting or other earth movements. The work of the Geological Survey in these parts, however, has revealed the existence of a vast system of faulting and overthrusting, which explains in a simple and consistent way all the irregularities and discrepancies in the system which have been attributed hitherto to the other agencies mentioned. This being so, the construction of a composite section from the evidence available at several points along the Witwatersrand, and the using of it as a basis or standard of comparison with individual sections, is completely justified. The value of such a standard in the future work of the Survey, and to prospectors and engineers in the field generally, is too obvious to need demonstration.

Faulting on the Central Rand.

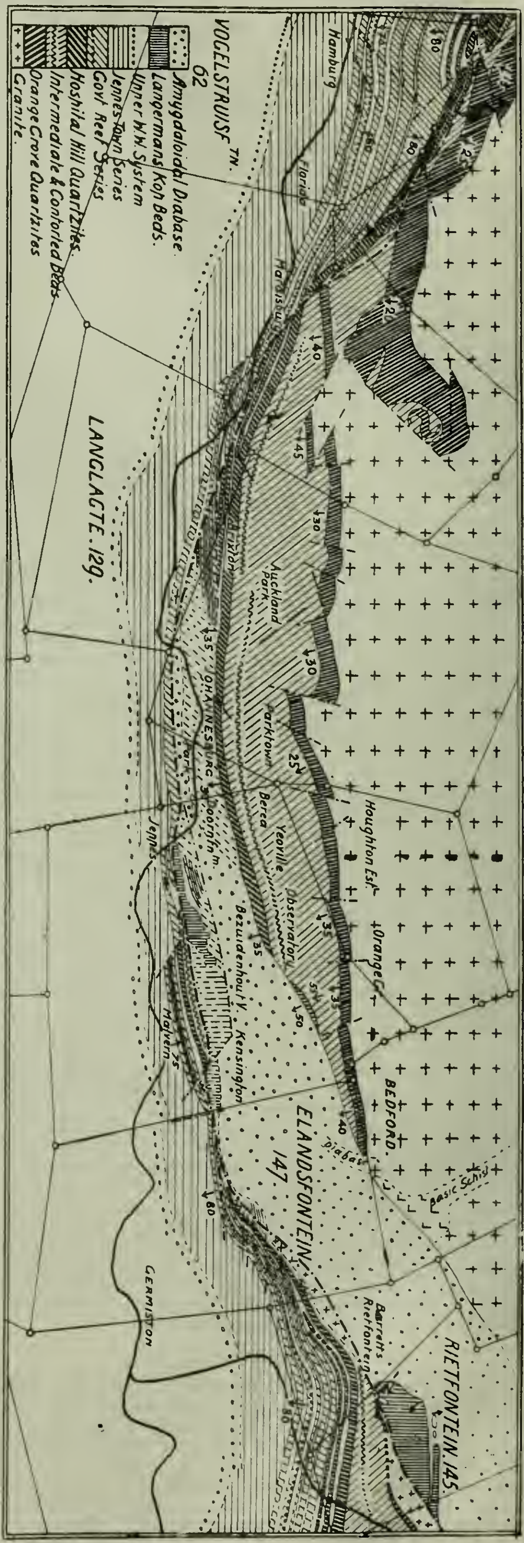
The existence of severe and extensive faulting in the Lower Witwatersrand System was discussed in Dr. Mellor's earlier paper, and the accompanying map, which is practically a facsimile of that in his more recent contribution on the same subject, shows as clearly as possible the main structural features without the introduction of unnecessary detail. It may be remarked that although the faults are necessarily represented by more or less well defined lines, " such breaks are in nature not always so definite, but may, on the contrary, be made up of several smaller lines of fault or of much broken zones of country. This is particularly the case with such oblique faults as we are here mainly concerned with, which can frequently only be definitely located by patient and sometimes very laborious plotting of individual beds and groups of strata." As indicated in the previous paper, the main line of faulting on the Central Rand enters the Witwatersrand System near Rietfontein, passes through the middle of Johannesburg, and is continued westward through Claremont to the north of Maraisburg township. " From Johannesburg to Claremont," says Dr. Mellor, " this break traverses the series of coarse grits, quartzites and shales which lie above the Hospital Hill quartzite, and which have been collectively referred to as the Government Reef series. In the neighbourhood of the break the quartzites and shales of this series have suffered severe compression, with the result that the outcrops of the bands of shale are in many cases much reduced in breadth, or are even so little in evidence that adjacent quartzites are practically in contact with one another. . . . To the north of Maraisburg the main break passes obliquely across the Hospital Hill quartzites, and continues to traverse for a long distance westwards the beds which lie between the Hospital Hill and Orange Grove quartzites. One result of this is that these two conspicuous series of quartzites are frequently brought very close to one another, in some places almost in contact, as, for example, just north of Maraisburg, and again to the north of Roodepoort. At the same time, the beds between the two are very much broken, and after a survey of the ground I can say with confidence that a true section of these beds is not to be found from Maraisburg westwards to beyond Witpoortje." Obviously the result of this passing of the main line of faulting from one horizon to another is that great discrepancies are found to exist in the field between actual sections and the composite section constructed by Dr. Mellor from the evidence of the more or less undisturbed horizons.

Central Rand Sections.

It is to the less disturbed blocks of country that one must look, of course, for reliable sections of the Witwatersrand System. " With regard to the beds below the Hospital Hill quartzites such a block exists to the north of Johannesburg, and presents a number of excellent sections." They have, therefore, received a great deal of attention, as indicated earlier in this article. " In contrast with the degree of care with which the beds below the quartzites of the Hospital Hill have been treated is the scant attention hitherto paid to the beds which succeed the same quartzites, and which lie between them and the Main Reef series. This neglect is, no doubt, due to the fact that, in the immediate neighbourhood of Johannesburg, this series is so broken that any attempt to identify individual horizons, or to follow particular beds over any distance, is attended with considerable difficulty. In sections of the Central Rand the beds in question have been usually treated as a series of sandstones, or quartzites and shales possessing no very definite characteristics, and either passed over practically without notice, or associated without distinction with the Hospital Hill quartzites. The only point which has attracted much attention is that while on the West Rand there is evidently a very great thickness of beds between the Hospital Hill quartzites and the Main Reef, in which several well-known and definite horizons like that of the Government Reef and the Coronation Shales, have received special names, on the Central Rand this great thickness of beds appears to be much reduced, and this reduction has been almost universally regarded as being due to original differences in the thickness of the component beds, involving a thinning out of the whole formation eastwards towards Johannesburg. Much evidence, however, is to be found that this thinning out is not due in any great measure to any original differences in the thickness of the formation, but that the diminution in the width of outcrop of the beds in question is mainly the result of other causes." Coming now to individual sections, Dr. Mellor refers to the unbroken area north of Florida as presenting very good opportunities for studying the beds above the Hospital Hill quartzites, and says that the section afforded is the most complete that he knows of east of the Witpoortje break, and one which there is no difficulty in comparing with what are usually regarded as typical West Rand sections. "Perhaps the best line of section across this area is one which would form a continuation northwards of the west boundary of the township of Hamburg, midway between Florida and Roodepoort, more especially as in the neighbourhood of this line the natural exposures are supplemented by extensive trenches and other prospecting works. The section here obtained, supplemented by observations both east and west of the line, forms part of that shown in Plate XVII., fig. 2 (the composite section published in our last issue), and those familiar with the better known Witpoortje section, which may be taken as belonging to the West Rand type, will have no difficulty in recognising the close similarity between the two."

It is pointed out by Dr. Mellor that, contrary to the generally accepted view that the whole formation increases in thickness going west, there is a considerably greater thickness in the neighbourhood of Florida and Hamburg than at Witpoortje, whether the section be considered as a whole or with reference to the individual members of which it is made up. "There is, however, no reason to suppose that the greater thickness shown by the Hamburg section is due to any abnormality. Although to the north of Florida there appears to be a duplication, to a small extent, of a portion of one of the quartzites, there is no evidence of any repetition along the Hamburg line, and, as far as can be judged from the surface evidence, the section there presented, within the limits named, is perfectly good, although it probably represents something approaching a maximum thickness for this portion of the Rand."

Along the Hamburg line the best markers in the Lower Witwatersrand System are all well seen. In the Government Reef series the most characteristic and most easily followed horizons are those of the Government Reef itself and the Coronation or West Rand Shale. The most characteristic feature of the Government Reef is the manner in which it almost invariably lies directly on the shale below, and even where the pebble bed is absent the same sharp junction of the shale with the quartzite is seen. The North Coronation Reef, on the other hand, rarely lies at the extreme foot of the quartzites with which it is associated, but has usually at least a few inches of non-pebbly quartzite or sandstone below it, which passes without any sharply marked junction into the underlying shales. The Coronation, or West Rand, Shale itself usually has a well-marked slatey outcrop, and on account of its highly ferruginous and banded character is liable to be mistaken for the Hospital Hill slate, "as is shown in the case of a map of the West Rand by the late Dr. Carrick, where a shale occupying the portion of the Coronation Shale is indicated as Hospital Hill Shale. In addition to the similarity between the Coronation shale and the Hospital Hill slate as seen in outcrops, there is frequently found below the former a thin band of hard quartzite suggestive of the 'Speckled Bed,' which it somewhat resembles in appearance. A band of this character is well seen to the north-west of Roodepoort and in the Witpoortje section. There is, however, very little resemblance between the quartzites which lie above the Hospital Hill slates and the Coronation shales respectively, nor is there much similarity in the underlying beds." A third characteristic group of beds, mentioned by Dr. Mellor, is that associated with the "Promise Reef," comprising very soft, rather fine-grained sandstones, associated with thin and variable bands both of ferruginous shales and moderately coarse conglomerates, some of the latter at the horizon of the so-called "Stable Reef" being remarkable for the occasionally large size of the sparsely scattered pebbles they contain. The most useful marker in the Lower Witwatersrand System, we are told, is probably the group



MAP OF THE LOWER WITWATERSRAND SYSTEM ON THE CENTRAL RAND.

of green or Hospital Hill quartzites, which almost invariably afford good and prominent outcrops, and which maintain their characteristic structure and colouration with great persistency, and are, further, associated with a fairly characteristic type of dark, rather ferruginous shales." The quartzites may be said to show a transition in character between the Orange Grove quartzites below and the Government Reef quartzite above. A green colouration is observable in almost all the quartzites of the Witwatersrand System, and may, locally, be poorly shown in the Hospital Hill quartzites themselves, but generally it is a pronounced and persistent feature of the latter beds. The association of these beds with the striped beds of the Hospital Hill slates, and, in places, with the "Speckled Bed," adds to their value as a starting point for the correlation of widely separated sections.

Classification and Nomenclature.

In the sections which were given in our last issue it will doubtless have been remarked that Dr. Mellor has adopted a somewhat new classification of the various groups of strata which go to make up the Lower Witwatersrand System on the Central Rand. In view of the advance which has been made in our knowledge of the system as a result of the work of the Geological Survey, it will be admitted that some new method of arrangement and nomenclature is necessary in order that our more recent information should be placed upon a scientific and useful basis for future reference. In order that as little confusion as possible should arise from the rearrangement, Dr. Mellor has retained old names to a great extent, and added such new ones to the list as are already in common use among prospectors and others. The existing names of well-known horizons have been extended to include beds above and below them, where it has been considered advantageous, and in order to facilitate future correlations various sub-divisions have been made in accordance with such natural distinctive features as seem to lend themselves conveniently to the process. There are thus three series of approximately equal thickness, "and these are readily distinguishable throughout the greater portion of the Rand area. The lowest or Hospital Hill series includes the big shale group which occurs near the bottom of the system, together with the quartzites on either side of it (Orange Grove and Hospital Hill quartzites), which have some features in common with each other. The middle or Government Reef series includes an alternating succession of shales and quartzites, in which the latter are characterised by a prevailing coarseness of texture, and by the occurrence in them of numerous grit beds and pebbly bands usually known as the 'Northern Reefs,' of which the 'Promise,' 'Red,' 'North Coronation,' and 'Government' Reefs are the best known. The quartzites of this series are further characterised by their hardness and tendency to form definite outcrops usually occupying rising ground, in contrast to the softer beds which succeed them, although not to so marked a degree, as in the case of the Hospital Hill quartzites. The highest or Jeppes Town series includes a succession of strata characterised as a whole by their generally finer-grained character and by their readiness to yield to weathering and denuding agencies, as a result of which they are rarely seen at the surface, and tend to form comparatively low-lying ground as shown in the contour of the sections given. No sub-divisions have been made in this series, which is co-extensive with the Jeppes Town beds, and which corresponds approximately to the Doornfontein Beds of Drs. Hatch and Corstorphine." The "Red Bar" and its associated beds being of the same character, and forming an integral part of the big succession of quartzitic rocks to which the Main Reef belongs, are referred to the Upper Witwatersrand System. The line of division is thus placed "at the foot of the great and continuous mass of quartzites of which both the Main Reef quartzites and Red Bar form only portions. For while it seems probable that the line corresponding with the oncoming of the conditions under which the big mass of quartzites of the Upper Witwatersrand System were laid down, may be recognisable over large areas, it is by no means equally probable that the horizon of the Main Reef itself may be so generally capable of identification."

The accompanying map has been prepared from data given in the map accompanying Dr. E. T. Mellor's recent paper on "The Normal Section of the Lower Witwatersrand System on the Central Rand, and its connection with West Rand Sections." The main longitudinal fault line will be observed entering the map at the extreme north-west corner, passing through Johannesburg, curving back in an easterly direction along the southern edge of the Bezuidenhout Valley and thence coursing north-eastwards along the southern edge of the patch of the Rietfontein series on Rietfontein No. 145. A feature which is well illustrated in the map is the contraction of the beds above the Hospital Hill quartzites in the neighbourhood of Johannesburg, and the reappearance of some of them and the gradual opening out of the series to the east and west. As explained by Dr. Mellor, this structural arrangement is due to the shearing and dragging action of the main mass of the granite from north to south along the principal fault line. The map has been simplified from a more complete survey with a view to bringing out as clearly as possible the main structural features, many minor details being omitted. Thus only the main group of the Orange Grove quartzites has been represented, the upper portion (*i.e.*, of the composite section, published in our last issue), as well as the Ripple Marked Quartzite, Speckled Bed, etc., being left out. The general line of outcrop of the Main Reef has been indicated for purposes of comparison. The Langerman's Kop beds and the Rietfontein series have been indicated, for convenience, by the same kind of hatching, and it will be noted that the outcrop of the Government Reef, in the series of that name, is shown by a succession of dots. The quartzites alone, in the Government Reef series, are shaded. The beds marked as "Intermediate" are those between the Hospital Hill Quartzites and Orange Grove Quartzites, the Contorted Bed being shown by a wavy line. The scale is about 10,000 feet to the inch.

North Kimberley Diamonds.

At the first annual general meeting of shareholders in the North Kimberley Diamond Mines, Ltd. (formerly Otto's Kopje), held recently in London, Major Frank Johnson said that over 12 months were spent in preliminary work principally occupied in clearing the mine—"A" pipe—from the amount of water that had accumulated in it during the four or five years that work had ceased; therefore, of the current expenditure 12-17ths had been charged to capital, and it appeared in the balance sheet as development account, expenditure to date, £8,322. That might be regarded as the total cost of dewatering and clearing the amount of the *debris* which had fallen in from the cliffs at the side and bringing it to the state in which it was now, enabling regular production to be maintained. The profit and loss account showed a balance to its credit of £1,144. He had hoped, personally, that that balance would have been a great deal larger, but there had been the absolutely unforeseeable delays occasioned by the dewatering of the mine with the heavy falls of reef matter which accompanied that dewatering, or rather resulted from it, which had restricted the profit-earning period covered by the accounts to the five months; so that if they looked upon that £1,100 as the product of five months' work, they would see that, even on the limited scale at which they had been able to work, they had been earning profits at the rate of well over £2,500 a year. He hoped, and had every reason to believe, that in the current financial year a great deal larger tonnage would be dealt with. The two outstanding features were first of all the yield per 100 loads, which amounted to 4·78 carats per 100 loads. But what was even more remarkable was the very high and satisfactory price which had been actually realised for those diamonds. The price was no less than £4 17s. 4d. per carat.

ROOIBERG TINS IN 1911.

A Good Record of Progress—Satisfactory Financial Position—Prospects of an Increased Dividend.

The declaration of interim dividends Nos. 1 and 2, amounting to 15 per cent., during the year 1911 by the Rooiberg Minerals Development Co., Ltd., mark, it may be hoped, the beginning of a long and prosperous dividend-paying career. The announcement of the returns for December permit us to review the progress of the mine since the date of the last annual report, dated June 30th, 1911, and the following figures will be of interest:

	Tons Milled. (2000 lbs.)	Tons Concentrates. Reserved. (2240 lbs.)	Metallic Tin in Concentrates per Cent.
1910-11	17,781	961·83	67·09
1911—			
July	1,506	71·45	66·80
August	1,526	67·89	68·01
September	1,605	71·47	67·71
October	1,601	68·76	65·55
November	1,581	67·00	65·00
December	1,505	60·00	69·00
July to Dec., 1911	9,324	405·81	

If one makes allowance for the unusually high returns of February and March, 1911, due to the resolution of the board to take advantage of the high price of tin then ruling and mill some of the rich ore at grass, it is evident that the recovery has been, altogether, satisfactory.

The following is a statement of the monthly capital expenditure and estimated profits since the beginning of July last, according to the company's published reports:—

1911.	Capital Expenditure.	Estimated Profit.
July	£1,606	£5,714
August	2,380	4,753
September	15,023	3,517
October	4,629	3,554
November	7,235	4,275
December	11,491	3,074
	£42,364	£24,287

On reference to the balance sheet and directors' report, as presented at the last annual meeting in September, it will be seen that there were at the end of the financial year, as on the 30th June, 1911, cash assets which, after allowing for certain liabilities, amounted to £78,506. From this there was to be deducted an amount of £43,537, representing the estimated expenditure, still to be incurred, on the new plant and reservoir. The capital expenditure contemplated, as will be observed from the statement given above, has been nearly effected. Taking the round sum of £50,000 as allotted for capital expenditure, there remained a sum of £28,000 in the shape of available cash assets. Adding to this the sum of £24,287 since obtained as profits, we have an amount of £52,287, against which there is to be set the dividend declared last half-year of £13,500, and sundry smaller amounts due to base metal royalty and mine taxation, leaving something like £38,000 as available cash assets at the beginning of the present year. In view of the fact that these results have been obtained with machinery which is only fit for the scrap heap, and which will be relegated there at an early date, the position of the company can only be regarded as distinctly gratifying from the dividend producing point of view. Last year the dividends absorbed a sum of £27,000. Even on the basis of the old crushing returns it should be possible to declare a considerably higher total dividend during the current year.

East Rand Proprietary Mines.

The following cablegram was despatched to the London office of the East Rand Proprietary Mines last Saturday:—"The results of last month's operations are as follows: 820 stamps, milled 162,876 tons, 56,391 ozs. of fine gold recovered from all sources, £78,992 profit for the month. The profit for the month of December has been increased, in order to enable certain expenditure incurred over the whole year, principally on development account and profits tax on reserve gold, to be written off in the annual accounts. In addition to the above declared output, 1,330 ozs. have been placed to gold reserve, making total reserve 17,898 ozs. The clean-up of the cyanide works commenced on the morning of the 27th, and was completed on the 30th. The clean-up of the mills commenced on the morning of the 30th, and was completed the same day."

Development.—The following is a copy of a cablegram which was despatched to the London office of the East Rand Proprietary Mines last Saturday: "Cason overlap, Phoenix reef. The following are the results obtained to date: 19th—East drive, distance sampled 44 feet, reef width 27·77 inches, assay value 3·3 dwts., total footage driven 50. 19th—West drive, distance sampled 16 feet, reef width 22·8 inches, assay value 1·4 dwts., total footage driven 47. 20th—East drive north, distance sampled 26 feet, reef width 16·4 inches, assay value 4·3 dwts., total footage driven 40. 20th—East drive south, distance sampled 47 feet, reef width 16·3 inches, assay value 1·2 dwts., total footage driven 74. 20th—West drive north, distance sampled 154 feet, reef width 17·5 inches, assay value 13·8 dwts., total footage driven 160. 21st—East drive, distance sampled 201, reef width 26·1 inches, assay value 17·1 dwts., total footage driven 204. 21st—West drive, distance sampled 191, reef width 22·0 inches, assay value 15·0 dwts., total footage driven 212. 21st—East rise, No. 1, distance sampled 16 feet, reef width 15·5 inches, assay value 23·9 dwts., total footage driven 22."

Sheba and Rosetta.

For the month of December the Sheba declared an output of 2,704 ozs., while the Rosetta declared 406 ozs.

Rex Gold Mine.

The report of the Rex Gold Mines, Ltd., for the year ended 30th June last, presented to the meeting held recently in London, states that Mr. Vincent Frederic Bredigan was appointed mine manager and entered upon his duties in April last. The new 10-stamp battery was ordered in September, 1910, and commenced running in March last. Owing to shortage of water, it was decided to instal an electric plant, the power being obtained from Glynn's Lydenburg power station, distant about half a mile from the mill site, and the directors trust that the monthly output will now be considerably increased. The directors regret that it has not been possible to increase developments to a greater extent, but they have reason to believe that the manager has done everything possible, having regard to the labour available and the funds at his disposal. Additional claims—seventeen in number—situated in the centre of the company's ground, have been acquired since the date of the last balance sheet, and so far the underground workings in these claims have given results sufficient to justify their purchase.

Mines of the Witwatersrand.

VI.—MEYER AND CHARLTON G.M. CO.

A New Mine with a New Plant—Sound Underground Position—Improving Returns Announced—Plant Operated Entirely by Electricity.

THE fortunes of the "house" of Albu or the General Mining and Finance Corporation have always been intimately associated with those of the Meyer and Charlton gold mine, and the present position of this famous property, which is named after two pioneers who helped to make history in the infancy of the Witwatersrand is one on which the firm of which Sir George Albu is the presiding genius is thoroughly to be congratulated.

The Wealth of the Outcrops.

It is a striking and important fact that over a very large extent of the Witwatersrand the older outcrop mines are now manifesting much improved positions. Their rich upper levels have been exhausted, and from their lower workings they are securing profits per ton which compare most favourably with earnings when a mill recovery of an ounce to the ton was deemed nothing out of the ordinary. We have in recent issues referred at some length to the gratifying developments at the City and Suburban and the Ginsberg—two well-known and long-established ventures. The Meyer and Charlton may be placed in the same class of improving propositions, and that these mines should lately have encountered much better ore as their southern boundaries are approached is a valuable and convincing refutation of the hardy old misconception that the auriferous conglomerates become impoverished in depth.

Improving Profits.

The profits of the Meyer and Charlton to-day are substantially larger than they ever were before. December, 1911, was in fact a record month for the company, the aggregate profit being higher and the working costs lower than at any previous time in the Meyer and Charlton's history. Speaking at the last annual meeting of the company, Sir George Albu remarked that the average recovery value of the mine had been 37s. 9d. per ton and the average net profit 13s. per ton over the twenty-two years of the company's existence ending with December 31st, 1910. Referring to the acquisition of new ground, the Chairman further remarked: "I am as certain as one can be under the circumstances that the ore contents of the new area will prove to be of a highly payable nature, as was the case in the old mine." Sir George Albu's opinion appears to have found abundant fulfilment during 1911 and especially in the latter months of that year. During the twelve months a working profit of £93,248 was earned, despite the fact that the mill was closed down from February 27 to June 3. Having regard to this, the 1911 profit compares most favourably with the earnings secured in 1910, when milling was carried on without interruption throughout the year and £112,926 resulted. Moreover, the rate of dividend-earning was maintained at 40 per cent., £80,000 being distributed. The company has since its inception distributed over a million sterling amongst shareholders—to be correct £1,035,309—a record of which the company and all those associated with it may be justly proud. The following table states the salient features of output and profit returns for the past year:—

	Tons Milled.	Yield per Ton.	Costs per Ton.	Profit per Ton.	Total Profit.
March quarter ...	24,769	33/ 9	18/10	14/10	£18,471
June quarter ...	10,946	30/10	21/ 7	9/ 3	5,086
September quarter.	40,423	33/ 2	18/ 6	14/ 8	29,730
October	13,797	37/ 0	18/ 2	18/11	13,045
November	13,378	37/ 1	17/10	19/ 4	12,908
December	13,841	37/ 3	17/ 0	20/ 3	14,008

Meyer and Charlton: The New Headgear.

The Headgear: Another View.

Additional Ground and New Equipment.

Within the last year or so the affairs of the Meyer and Charlton have undergone a radical change for the better. By the acquisition of the 40·7 deep level claims of the Lark

Syndicate in 1909 and of the undermining rights in respect of 13·72 bewaarplaatsen claims from the Government the life of the mine has been lengthened and the general outlook for the company vastly improved. At the end of 1910 it was calculated that the company held 55½ intact reef claims. It may be recalled that the consideration payable to the Government in respect of this ground has been fixed at an interest of 11·06 per cent. in the annual net produce of the company. Not only may the Meyer and Charlton be said to possess a new mine, but it is quite as true to remark that the company possesses a new equipment as well. On February 27 last milling temporarily ceased and construction work and widening of the shaft from three to five compartments were commenced. Milling was resumed on the 3rd June, and incidentally it may be observed that advantage was taken of the stoppage to increase the ore reserves by about 40,000 tons of an average assay value of 12·6 dwts. per ton. The new equipment includes a new steel headgear and ore bins of most modern design and in marked contrast to the old timber structure which had nevertheless rendered yeoman service. The accompanying photos show the substantial nature of the new headgear. In addition, there are a new rock breaking and sorting plant, an electric winder for hoisting five-ton skips, and a new electric 30-drill compressor, which latter installation has only recently been completed. Furthermore, the mill has been renovated and the former three-ton steam driven hauling engine has been converted into an electric winder. The necessary buildings have also been erected. Capital expenditure incurred mainly in connection with these items for the first three quarters of the year was as under:—

	March Quarter.	June Quarter.	September Quarter
Permanent works	£6.104 12 3	£6.090 19 1	£1,546 5 7
Machinery & plant	24,736 11 4	16,280 7 9	8,560 1 6
Buildings	316 14 10	775 6 11	521 1 10
Timber setts ...	—	310 0 0	—
	£31,157 18 5	23.456 13 9	10.627 8 11

Total £65,242 1s. 1d.

The Underground Position.

Underground the mine is looking extremely well. The ore reserves at the end of November amounted to 310,000 tons of an average assay value per ton of 10 dwts. over the average stoping width of the mine. This compares with 277,029 tons of 7·81 dwts. per ton value at the end of 1910, and it will thus be seen that whilst there has been no substantial augmentation of tonnage, the assay value has improved greatly. The grade of ore below the 14th level downthrow is quite satisfactory, and one can at least state that this stratigraphical disturbance has had no ill-effect on the value of the ore. Another most encouraging feature is the development results secured on the pyritic band, which is worked in this mine as well as at the adjacent Wolhuter and other mines on the Rand. Hitherto the greater part of this ore body which is mined at the Meyer and Charlton has been drawn from the 14th level, but very encouraging results are now being obtained on the seventeenth level, and the management is preparing to put in a crosscut to intersect this reef at the 18th level. From 130 to 150 tons of pyritic band ore are being mined per day, and last month the average value of development on this reef was 5·8 dwts. per ton over the substantial width of 76 inches. In some places this lode is as much as 22 feet wide in the Meyer and Charlton, and it naturally constitutes a valuable asset of the company.

Sinking to the Nineteenth Level.

Sinking is now proceeding to the 19th level, and it is expected that this point will be reached about the middle of March next. Substantial increases in the ore reserve will then be effected month by month. The 19th level will constitute a valuable and important point, as it will give to the company another 300 feet of backs. By the middle of the year development work will, it is anticipated, be opening up a monthly tonnage 50 per cent. in excess of that mined. In connection with the underground workings of this property, it should be borne in mind that the new claim area acquired will admit of longer levels being driven on account of the much increased length along the strike of the reef as compared with the old mine. This, of course, means cheaper development and lower mining costs. It may here be remarked that the Meyer and Charlton Company is in the happy position of having all its reserve of ore paid for, the development redemption account has been extinguished, and furthermore all development exclusive of shaft sinking is charged to working expenditure. In addition to this the company possesses a substantial balance on mine development account, which can, if deemed advisable, be drawn upon for future excess development.

No Steam Plant Employed.

Now that the electric compressor has been installed, the Meyer and Charlton is a mine which does not generate a single pound of steam power; indeed, with the unimportant exceptions of a boiler in the change house and a boiler for cooking in the compound, there is absolutely no steaming plant on the property. The mine is entirely operated by electricity; it is without any steam stand-by plants, and is therefore one might say entirely at the mercy of the Victoria Falls and Transvaal Power Company. Having regard to the recent failures of this concern to fulfil contracts, the wisdom of doing away with emergency equipments is open to question. At the same time, in justice to both the managements of the Power Company and the Meyer and Charlton, it should be pointed out that during the past two months not one single minute of running time has been lost at this mine through any faults of the power concerns.

Native Labour.

The Meyer and Charlton, like the majority of other Central Rand outcrop mines, is a favourite with natives, and is well supplied with unskilled coloured labourers. The complement of the company to-day is about 1,000, but machines are still employed in the property on stoping operations.

A Bright Outlook.

The financial position of the company is one of undoubted strength. The last balance-sheet showed that after providing for the dividend for the second half of 1910, profits tax and the Government's percentage of the net produce and other current liabilities, there was a net surplus of £115,218 in cash and cash assets. Capital expenditure incurred during the year has, of course, absorbed a considerable proportion of this; as shown elsewhere over £65,000 were expended mainly in connection with the new equipment during the first nine months of the year. Still, after providing for this, and after allowing for the two dividends paid out during 1911, and for payments due to Government, the company's next balance sheet, having regard to the satisfactory profit earned last year, will exhibit a very strong financial position. Everything points to the probability of the affairs of the company exhibiting a much stronger position at the end of the current year. The prospects of the company are as a matter of fact exceedingly bright. Taking into consideration the underground position, the much extended length of " life " secured to the company by reason of the new ground, the excellent state of the equipment and the very satisfactory positions with regard to finance and labour, we can state with confidence that there are few mines in South Africa or elsewhere which can boast of such a generally assured position as the Meyer and Charlton.

KLERKSDORP MINING ACTIVITY.

A General Review of the Present Position at the Leading Mines of the District.

Afrikander Proprietary.

The Afrikander is the premier mine of the Klerksdorp district, and it is a fact that although all the work hitherto done upon it has proved that it is an excellent mining proposition, its spasmodic working is responsible in a greater degree for the severity of the slumps which have from time to time affected Klerksdorp than any other property. At the end of December, 1910, the amount of payable ore developed totalled 227,088 tons of a milling value of 8·27 dwts. over 37·80 inches. The total amount of ore developed included, in addition to the ore above mentioned, 158,893 tons of 2·62 dwts. ore over 37·80 inches. This is a very satisfactory proportion of payable ore, but notwithstanding this the mine has been shut down all the year, and there are no definite tidings as to when its operations are likely to be resumed.

Warren Hill.

This mine has been steadily crushing all the year, but as it is a private venture the returns are not published, and we can give no idea of the results of the working, though as operations are continuous we can only assume that they are satisfactory. Mr. D. Johnston is at the helm of affairs at the mine.

Ariston.

This mine has also continued crushing all the year, but, as it is worked by a private tributing syndicate, results are not published. In this case also we must assume that continuous working means satisfactory results. Mr. T. Angus continues in charge of the property.

New West Bonanza.

This mine has fought an uphill fight against want of capital and development. The result of 1910's working was a loss of £4,400, and it was thought that the addition of a tube mill would cheapen working expenses and make a profit, but the lack of development made itself more severely felt with the increase of crushing capacity, and after a hard fight the mine was closed down in November. The value of the ore crushed has always been high, but the working costs were also high. We have not heard the intentions of the company with reference to the property.

The Quest Co.

This is the name of the company owning the old Buffelsdoorn property. Operations of an exploratory character have been proceeding for some months, and in November a start was made with 30 stamps of the old mill. This has, of course, necessitated a lot of restoration work in the mill and cyanide works, and the mine has required a great deal of attention. Mr. Penrose is the manager entrusted with the re-start. We have been unable to ascertain any particulars of the operations to date.

Machavie G.M. Co.

In November last preparations were begun for a fresh start at this property. Mr. Osborne, the newly-appointed manager, has been on the property collecting boys and doing the necessary work preparatory to starting production, but a good deal of work is necessary to be done before a real start can be made. Machinery requires a large amount of alteration before operations can be carried on with the success which the mine is capable of. The ore is of high value. For the eleven months ended November, 1910, 14,580 tons were crushed of an average assay value of 13·5 dwts.; but the extraction was but 8 dwts. owing to a difficulty in treating the ore. The company should be a good contributor to the Klerksdorp output in 1912.

Vaal River Gold Fields.

This company, which is one of the line of companies owning the Gold Estates mynpacht, was reorganised early in the year under the control of the Oceana Development Company, and Mr. C. A. V. Conybeare, the chairman of that company, visited the property. Work was commenced on the new workings on the reef dipping east, but the results were not satisfactory, and it was resolved to complete the erection of the five-stamp mill on the site east of the town and work from the old mine, but all work was shut down peremptorily and very little done. Nothing has transpired as to the intentions of the new owners.

Cyferfontein Line.

Much interest has been centred upon the work of the syndicate, which had reported the discovery of the Main Reef in a borehole on the farm Cyferfontein 390, about 15 miles north of the town. The syndicate did a great amount of boring and also some shaft sinking, but the results in the first borehole, which were so very encouraging, were not confirmed, and operations have been closed down. It will be remembered that the first borehole struck a very rich reef, and it is unfortunate that the reef could not be picked up in any of the other workings.

Abelekop.

A Kimberley company has erected a small mill at this place, near Schweizer-Reneke, and in January recovered 232 ounces of bullion.—*Klerksdorp Record.*

Memba Minerals.

The report of Memba Minerals, Limited, from September 1, 1910, to November 30, 1911, states that, as a result of Mr. Barton's visit to England, a further expedition was dispatched to Mozambique in the early part of the present year, together with a number of qualified mining engineers. The examination of the territory under licence from the Portuguese Government was continued, and a considerable area was examined, but the Directors regret to say that the investigations made have so far not resulted successfully.

Rooiberg Minerals.

The following are particulars of the estimated result of operations on the Rooiberg property for the month of December:—Stamps, 10; days run, 29; milled, 1,505 short tons; concentrates, 60 long tons; average assay value metallic tin, 69 per cent.; net capital expenditure, £11,491; estimated profit, £2,691; adjustments due to fluctuations in the price of tin to be added to estimated profit in respect of August shipments, £383; gross profit for month, £3,074.

Sir George Farrar Interviewed.

Interviewed by a representative of Reuter, this week, Sir George said he had specially come to meet shareholders in London, and to ascertain their views and give them all information; also, he would, if possible during a limited stay of two or three weeks, interview the shareholders in other centres. "No one," he continued, "would regret more than he the irregularities disclosed by the report of the Committee of Enquiry." Commenting on the impression which he said some shareholders had that nothing had been done in the way of improving and re-organising affairs, Sir George Farrar said ever since he returned to the Rand last October the general work of re-organisation had steadily progressed. Mr. Caldecott, in August, was given supervision of the reduction plant, and arrangements were made for increased tonnage. The new consulting engineer had also assumed his duties. It would thus be seen, he said, that considerable re-organisation had already been accomplished, and was being steadily carried out. Sir George emphasised the opinion that drastic changes only created unrest, without always having the desired effect. He hoped his visit would result in ending much of the criticism against the company, which created unrest both to the shareholders and employees, and militated against efficient administration.

PILGRIMS REST MINING AND RAILWAY COMMUNICATION.

Particulars of the Sabie-Graskop Extension—Its Effect on the Mines.

In the course of the report on the new railway from Sabie to Graskop, the following particulars are given: Approximate length, 21 miles; estimated cost, exclusive of rolling stock, £114,949; average cost per mile, £5,473; estimated amount available out of sum authorised for construction of Nelspruit-Sabie section, £12,000; net amount required and provided to complete line, £102,949. Information in regard to probable results of working, traffic possibilities, etc.: Estimated gross loss for the first twelve months after the opening of the line for traffic, £383; estimated loss after paying interest on capital at the rate of 3½ per cent., £4,406. This is the second section of the Nelspruit-Graskop line, which was authorised under Transvaal Act No. 10 of 1910. Construction work has already been commenced on the first section, Nelspruit to Sabie, a distance of approximately fifty-five miles, funds for which were provided by the Transvaal Government prior to Union. The country to be traversed is broken and hilly, and for some time to come the principal sources of revenue will be from the mines and plantations in the district, as, notwithstanding the fact that the district is well watered, a very small proportion of the available land is under cultivation. Lack of enterprise in this direction is attributed to the absence of adequate transport facilities and to the indifferent nature of the soil, to improve which fertilizers cannot be employed, except at a prohibitive cost, on account of the high transport charges. Cattle breeding has been taken up recently by certain farmers in the vicinity of Graskop, many of whom will, it is anticipated, commence dairy farming as soon as they are afforded means of transporting their produce to market. About fifteen miles east of Graskop there is said to be excellent soil for growing tropical fruits of all kinds, but very little has been done in fruit culture on account of the distance from a market and the difficulty experienced in getting the fruit there. Blue gums do exceptionally well in the Origstad Valley and in the vicinity of Lydenburg, and the soil and climate are said to be particularly suitable for wattle tree growing. A large area is already planted with wattle trees, and here and there along the route of the line substantial wattle plantations are springing up. At one place three thousand acres are to be planted with wattle trees, and at another one company proposes to place as many as eighteen thousand to twenty thousand acres under wattle tree plantations. The construction of this line will no doubt encourage the development of the wattle industry and a number of persons have expressed their intention of entering the wattle business as soon as the line reaches Graskop. At Pilgrims Rest mining operations are being vigorously pushed forward. There is already a battery of sixty stamps and two tube mills on one property, and the employees in January last numbered 136 white and 1,752 natives. At Graskop four mining propositions are at present being worked with two 5-stamp batteries. To the north of Graskop there are several proclaimed farms, certain of which are reputed rich in gold bearing reef. The railway should be of invaluable assistance in the development of these additional gold fields, and the cheaper transport thereby afforded should enable the holders of small concerns to spend more money on expansion. Particulars of the mining propositions in the Sabie, Graskop and Pilgrims Rest districts are appended:—Mines: Young John (Spitzkop); Betty Langriff (Sabie); Buchanan Syndicate (Sabie); Conberis No. 2 (Sabie); Glynn's Extension (Sabie); Glynn's Lydenburg (Sabie); Grampians Mine (Sabie); Rex G.M. Co. (Sabie); Spitzkop Farms (Sabie); Glen d'Or (Sabie); Hawton Sinclair; Jollie Bright Syndicate (North of Sabie); Hangregil G.M. (North of Sabie); Klen Sabie G.M.; R. Burnham (Graskop); Desire G.M. (Graskop); Mali Dyke (Graskop); New Lisbon Berlyn (Graskop); New Chum Syndicate (Graskop); B. L. Houston (Graskop); T.G.M.E. (Vaalhoek) (North of Graskop); Little Octopus (North of Graskop); T.G.M.E. (Central) (Pilgrims Rest); T.G.M.E. (Elandsdrift). Reef and alluvial diggers: African Farms (Sabie); R. R. Hollins (Sabie); Lydenburg, Transvaal (Sabie); Rietfontein (Sabie); Ceylon Lydenburg (North of Sabie); Waterval Verg. Syndicate (North of Sabie); T. Brown (North of Sabie); W. Davies (North of Sabie); C. Alfordon (North of Sabie); J. H. Pellew (North of Sabie); New Theta (Graskop); Transvaal Gold Trust (Graskop); C. Hoyer (North of Graskop); C. Larsen (North of Graskop).

Koffyfontein Diamonds.

The rough and uncut diamonds registered at the office of the Detached Assistant Magistrate, Koffyfontein, during the month of December were 6,730 carats, value £15,937 10s.

Swaziland Corporation.

Presiding at the thirteenth ordinary general meeting of the Swaziland Corporation, Limited, Mr. Bernard C. Molloy moved the adoption of the report for the year ended September 30 last. He explained, at the outset, that the Company's land area remained the same as last year—75 miles at a rental of £53. Their mineral area was 641 square miles at a rental of something over £600 a year. Their cash balance in hand was nearly £23,000. There was a small falling off from the previous year, but that was due, not to any unusual expenditure, but to the expenditure caused by the carrying out of the programme decided upon in the previous year. They had asked their Manager to give the latest news for presentation to the shareholders, and he cabled as follows: "Alluvial tributed; two agreements signed." That meant that two men of the class they wanted had entered into agreements with the Company and were starting work upon this alluvial. The observation of their Manager out there on the Mhlosheni alluvial—the one he was speaking of—was this: "This alluvial proposition has been shut down through the inability of the lessee to make it pay. After he stopped work, I made a rough survey of the ground and took pannings of the exposed face in his last paddocks. The tests confirmed our previous tests of a steady value of 1s. 1d. over all, or 2s. 4d. in the gravels. If these tests are confirmed by a systematic prospect of the area, there is £73,000 worth of alluvial gold in the Upper Mhlosheni Valley."

S.A. School of Mines.

Applicants for Government bursaries, tenable for one year at the South African School of Mines and Technology, are reminded that all applications should be forwarded to the Principal not later than January 15th. Application forms may be obtained at the secretary's office. These bursaries are limited in number, and are awarded up to the limit of the number allowed, only to those students who have passed well in the matriculation examination, and who, without financial assistance, would find it impossible to pursue their studies. The bursaries are of two classes, viz., tuition, and tuition together with boarding for those students living at a distance from Johannesburg.

High Mining Salaries

EARNED by those holding Mining Certificates as Mine Managers, Foremen, Surveyors, Mechanical Engineers and Engine Drivers. Private Individual Tuition and Correspondence Lessons where personal tuition is impossible.—E. J. MOYNIHAN, Consulting Engineer, 10, Anglo-Austrian Buildings; Box 2061.

"S.A.M.J." ANNIVERSARY NUMBER.

Special Competitions—An Interesting Announcement.

Essay Competition.

In connection with the issue of our twenty-first Anniversary Number, which will be published in May next, four prizes, each of £3 3s., are offered for the best essays received on some aspect of—

(a) Mining;
(b) Metallurgy;
(c) Mechanical Engineering;
(d) Electrical Engineering.

One prize will be given for the best contribution received under each of the above headings. Essays must be written with special reference to the mineral industries of the Union of South Africa, Rhodesia, German South-West Africa, Portuguese East Africa, or the Katanga region of the Belgian Congo. They must be of topical and South African interest. A very wide range of subjects is thus open, and it is hoped and believed that many valuable contributions will be submitted. The winning essays will be reproduced in the Special Anniversary Number of the *South African Mining Journal*, and will thus find a place in a production which will be remarkable in the records of South African journalism. The attention of competitors is directed to the following rules of the competition:—

1. Contributions must reach this office not later than March 31st, 1912. They must be addressed: "Anniversary Department, *South African Mining Journal*, P.O. Box 963, Johannesburg, Union of South Africa," and marked "Essay Competition," in the top left hand corner.

2. Contributions must be of not more than 1,500 words in length.

3. It must be distinctly understood that the decision of the Editor and Editorial Staff of the *South African Mining Journal* and of such judges as may be asked to adjudicate will be final and absolute.

4. Under no circumstances can responsibility be recognised for the safe return of manuscripts. At the same time every endeavour will be made to secure their safe return, if a fully stamped and addressed envelope is enclosed.

5. The right is reserved to reproduce in any issue of the *South African Mining Journal* all or any of the contributions submitted. All essays reproduced will be paid for at usual rates.

Photographic Competition.

In connection with the same issue a prize of £2 2s. will be given for the best photograph illustrating some aspect of: (a) Mining; (b) Metallurgy; (c) Mechanical Engineering; (d) Electrical Engineering. Photos must be of South African interest and must be of topical value. The winning photograph will be published in the Special Anniversary Number of the Journal.

The attention of competitors is directed to the following rules:—

1. Photographs must reach this office not later than March 31st, 1912. They must be addressed "Anniversary Department, *South African Mining Journal*, P.O. Box 963, Johannesburg, Union of South Africa," and marked "Photo Competition" in the top left hand corner.

2. The size and shape of photos submitted is left entirely to competitors.

3. It must be distinctly understood that the decision of the Editor and Editorial Staff of the *South African Mining Journal* and of such judges as may be asked to adjudicate will be final and absolute.

4. In no case can photos submitted in this competition be returned, and the right is reserved to reproduce all or any photos received in any issue of the *South African Mining Journal* without payment.

In all cases in which photos are reproduced in connection with this competition the name of the photographer will be acknowledged.

MINING MEN AND MATTERS.

Messrs. Lewis & Marks announce that in future the annual general meetings of all companies belonging to their group will be held in London.

* * * *

Sir Abe Bailey and Mr. Julius Jeppe leave for England on the 24th in connection with the lawsuit pending over the Amalgamated Properties of Rhodesia.

* * * *

Mr. C. E. Hutton, who has been assistant manager of the Jumpers Deep, general manager of the Treasury and manager of the Van Ryn G.M. Estate, has been appointed an inspector of mines.

* * * *

Mr. W. E. C. Mitchell (who recently resigned from the managership of the Ferreira Deep mine) left this week on an extended visit to England. He was accorded a very hearty send-off by employees and friends. Other oversea travellers were Mr. E. J. Sivewright and Mr. R. Mayer.

* * * *

The monthly general meeting of the South African Institute of Engineers will be held this evening in the Council Room of the Chamber of Mines. Two original papers will be read—the first by Mr. H. J. S. Heather, entitled "Current and Power Factor in Induction Motors"; and the second by Mr. Kenneth Austin, entitled "The Combustion of Coal." The other items on the agenda are concluding discussions on the following papers: "Notes on Cams for Stamp Mills," by Mr. G. M. Adams; "The Manufacture of Turbines as a Future Industry," by Mr. A. S. Ostreicher; "The Prevention of Dust in Development Drives of Mines during Drilling Operations," by Mr. C. J. N. Jourdan; and "The Metering of Compressed Air," by Mr. J. L. Hodgson.

* * * *

It is notified that the Commission of Examiners for Mechanical Engineers' Certificates of Competency will hold the next examination on Wednesday, Thursday and Friday, the 24th, 25th and 26th January, 1912, at 9.30 a.m., at the South African School of Mines and Technology, Eloff Street, Johannesburg. The prescribed form of application for examination is obtainable, without payment, by applying to the Secretary to the Commissions of Examiners, P.O. Box 1132, Johannesburg. Those wishing to enter for the examination must send in their applications before the 17th January, 1912. The following syllabus of examination is published for general information,and a detailed copy thereof will be supplied on application to the secretary. Candidates will be examined in the following subjects:—(1) Steam and the steam engine; (2) legal knowledge; (3) strength of materials; (4) winding plant; (5) mining plant; (6) electro-technics.

Nigel G.M. Co.

The following are the returns from the Nigel Company's mine for December: Gold, 4,727 ozs.; profit, £3,104; stamps running, 75; tons milled, 14,200; value of gold, £20,079; native labour, 2,200 boys, being 200 in excess of requirements.

Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

Kohinoor Diamonds.

To the Editor, *South African Mining Journal.*

Sir,—Would you kindly answer, if possible, the following questions in your issue of Saturday next. Thanking you in anticipation: (1) Is the Kohinoor Diamond Syndicate still existing? (2) Have they an office (3) Who is the secretary? (4) Are the shares of any value?—Yours, etc.,

QUESTOR.

Fordsburg, Dec. 14, 1912.

Annual Meetings in London.

To the Editor, *South African Mining Journal.*

Sir,—I do hope we shall hear nothing more about holding more annual meetings of Rand companies in London. The idea should be strenuously opposed on this side, and your protest of last week will, I hope, prove effective in resisting what seems to be gratuitous reflection on the honesty of all Rand business men. Trusting you will not allow the matter to rest,—Yours, etc.,

"SOUTH AFRICAN."

Rand Company Meetings.

To the Editor, *South African Mining Journal.*

Sir,—I trust your spirited leader of last week on the unwisdom of holding the annual meetings of Rand companies in London will find general support. The fact that Messrs. Lewis & Marks have decided to fall in with the wishes of some London shareholders in this respect shows that the agitation must not be disregarded. To my mind, the place will suffer in many ways if the example of Messrs. Lewis & Marks be widely followed, as it will tend more than ever to diverce the financial interests from the other interests of the country. I trust that chairmen will deal with the matter at the coming annual meetings here, and put on record their opposition to any change, coupling with their statements the reasons that fortify them in taking up that attitude.—Yours, etc.,

RAND SHAREHOLDER.

Rand Geology.

To the Editor, *South African Mining Journal.*

Sir,—If Dr. Mellor, of the Geological Survey, had written his Geology of the Witwatersrand to the order of the magnates, and not for the enlightenment of the man in the street, he could not have succeeded better. Take three instances. No. 1: He is evidently going to place Main Reef Series on Randfontein. No. 2: Having left the Blue Sky Series and Van Ryn Series out of his stratigraphy (though Nature has them both north of Main Reef), they are by inference Main Reef Series. No. 3: Du Preez is presumably too good to be traced north of Main Reef Series, for the public to get hold of, so it has to remain where it is for the present, although I, with my little eye, have long ago spotted its western hiding place by its unmistakable "North Reef," and its "Stable Reefs," but cannot vouch for "Leader" values unless opened up.—Yours, etc.,

SCOTT ALEXANDER,
"Rand Stratigraphist."

Johannesburg, Jan. 10.

[Mr. Scott Alexander might equally well have said: "If nature had arranged the Witwatersrand series to the order of the magnates it could not have succeeded better." Dr. Mellor merely records what he has found to exist in the field. He has placed all his evidence in print, and Mr. Scott Alexander has thus an opportunity of disproving it in detail instead of questioning its accuracy in a general and vague sort of way. With regard to the instances quoted we may reply: (1) The Survey is still a long way from Randfontein. (2) The reef developments on the Eastern Rand have still to be investigated—no pronouncement whatever has yet been made about them. (3) Dr. Mellor's conclusions about the Du Preez beds cannot be disposed of in this simple way. Will Mr. Scott Alexander go into more detail and give some evidence in support of his opinions?—Ed. *S.A.M.J.*]

Victoria Gold Mines, Ltd.

To the Editor, *South African Mining Journal.*

Sir,—For several years I have looked carefully for some news regarding a company called the Victoria Gold Mines Syndicate, Ltd., capital £12,000, in 1,200 shares of £10 each, in your paper, but so far without success. I therefore now venture to write and ask you to be good enough to inform me, if possible, if the syndicate is still in existence. Seeing the name of a well-known man in your city on the prospectus as chairman, I applied for ten £10 shares, which were allotted to me and scrip issued on the 9th May, 1903. I have never since heard anything about this syndicate, either by notice of meetings, reports of any meetings, if ever held, although my address was known to the secretary, nor have I seen any notice whatever in any Johannesburg newspaper. I thought it almost impossible that such a thing could happen in such a progressive and important city like yours, viz., that a confiding public's money could be taken by directors without giving the slightest indication to the shareholders how they have spent same.—Yours, etc.,

J. FORTUNI.

Royal Colonial Institute,
Northumberland Avenue, London, W.C.,
December 9, 1911.

[Perhaps the secretary will oblige.—Ed. *S.A.M.J.*]

New Company.

MARLA (RHODESIA) SYNDICATE.

This syndicate was registered in London on December 13, with a capital of £50,000 in 5s. shares. The objects are to carry on the business of miners, prospectors, explorers, metallurgists, dealers in mines, minerals, and other properties and rights, &c., in Africa or elsewhere. Minimum cash subscription, 80,000 shares. The first Directors (not less than three nor more than five) are to be appointed by the signatories. Qualification, 500 shares Remuneration: As fixed by the company. Registered office: 10 and 11 Lime Street, E.C.

Brakpan Mines.

The results of last month's crushing at Brakpan Mines are as follows: Stamps working, 110; running time, 29 days; ore crushed, 40,090 tons; tube mills working, 6; ore hoisted, 41,000 tons; ore from dump, 1,945 tons; waste sorted, 13·18 per cent.; fine gold declared, 13,478 ozs.; value declared, £56,717; equal to 28s. 3d. per ton milled; working costs, £36,603, equal to 18s. 3d. per ton milled; working profit, £20,114, equal to 10s. per ton milled.

THE GOLD OUTPUT FOR DECEMBER AND 1911.

Figures in Detail—Big Increase for the Year—Rand Produces Over 33½ Millions.

The output for the Transvaal for 1911 is greater than for 1910 by nearly three millions sterling, and the yield for the Rand alone is over 33½ millions. The increase for the year, it will be noticed, is 703,880 ozs., value £2,989,885, of which the Rand contributes 668,491 ozs., value £2,839,567, and outside districts an increase of 35,389 ozs., value £150,318. The number of stamps in operation in the Transvaal last month was 420 more than in the corresponding month of 1910. On the Rand itself 360 more stamps were at work, while in outside districts there is an increase of 60. The coloured labour position for the months of December, 1910, and 1911, as far as labour in gold mines is concerned, is practically unchanged. For December the gold output for the Transvaal is 709,908 fine ozs. of gold of the value of £3,015,499, which is a decrease, as shown above, of 9,821 ozs., value £41,714. For the Witwatersrand the yield of 680,782 ozs., value £2,891,780, is a decrease of 10,680 ozs., value £45,361. Contrariwise, outside districts in returning 29,129 ozs., value £123,719, show an increase of 859 ozs., value £3,647. Labour shortage and the effect of raw boys as well helped to keep the production quite normal. In outside districts the increase of £3,647 is due to the inclusion of returns from New West Bonanza for November, and a final clean-up for December, and also a ten per cent. increase on returns sent in by miscellaneous producers. The labour position has remained stationary. The yield and profit aspect for the past thirteen months for the Rand is as follows:—

	Days.	Daily Yield.	Daily Profit.
December, 1910	31	£84,498	£27,809
1911—			
January	31	85,753	27,209
February	28	88,878	28,272
March	31	88,962	26,631
April	30	90,395	28,123
May	31	90,188	26,765
June	30	93,028	28,255
July	31	93,160	27,112
August	31	93,508	25,799
September	30	94,834	27,240
October	31	92,891	26,040
November	30	97,905	27,483
December	31	93,282	27,605

THE LABOUR POSITION.

There is an increase of 399, according to the W.N.L.A. figures, compared with November, on the total employed on gold, coal and diamond mines. There is an increase on gold mines of 1,546 and on coal mines of 40, while diamond mines decreased their complement by 1,157.

GOLD OUTPUT, 1911.

The following are the salient figures for the year:—

	Ounces.	Value.
Total yield	8,237,723	£34,991,620
Increase over 1910	703,880	2,989,885
Rand, 1911	7,896,802	33,543,479
Increase over 1910	668,491	2,839,567
Outside, 1911	340,921	1,448,141
Increase over 1910	35,389	150,318

Total stamps—	
December, 1911	10,195
Over December, 1910	420
Rand, December, 1911	9,565
Over December, 1910	360
Outside, December, 1911	630
Over December, 1910	60
Tube mills—	
December, 1911	251
Increase on 1910	61

THE DECEMBER OUTPUT.

The following are the salient figures for December:—

Total output	709,908 ozs.
Value	£3,015,499
Decrease	9,821 ozs.
Value	£41,714
Rand output	680,782 ozs.
Value	£2,891,780
Decrease	10,680 ozs.
Value	£45,361
Outside districts	29,126 ozs.
Value	£123,719
Increase	859 ozs.
Value	£3,647
Total stamps	10,195
Decrease	33
Rand	9,565
Decrease	35
Outside districts	630
Increase	68
Tube mills	251

THE STAMP POSITION.

The stamp position for the month for the Transvaal shows an increase of 33 heads in operation. The Rand shows a decrease of 35, but outside districts operated 68 more. The changes notified are:—Outside Districts.—Increases: New West Bonanza, 10; miscellaneous, 58; total, 68. Witwatersrand.—Decreases: Aurora West, 20; Cinderella Consolidated, 5; Princess Estate, 10; Robinson Deep, 10; Vogelstruis Estate, 5; miscellaneous, 20; total, 70. Increases: Ginsberg, 5; Jupiter, 5; Wit. Deep, 25; total, 35: total increase, 33. Eight more tube mills were at work on the Rand than in the previous month.

TWELVE LEADING COMPANIES.

The returns from the twelve leading companies—the composition being the same as for November—in the aggregate show only a trifling alteration. Five fewer stamps were dropping, but two more tube mills were at work, the total tonnage milled being 982 tons less than in November, while the value produced was £2,166 more:—

	Stamps.	Tube Mills	Tons Crushed.	Value.
Randfontein Central	775	25	208,005	£255,208
Crown Mines	620	19	135,100	244,002
East Rand Proprietary	820	25	162,876	239,534
Robinson	250	6	48,700	113,746
Rose Deep	300	7	61,600	89,028
Geldenhuis Deep	420	7	58,730	86,148
New Modder	180	7	52,600	81,126
Simmer and Jack	320	7	65,200	78,018
Robinson Deep	200	5	44,850	77,198
Village Main Reef	225	5	38,801	74,773
Nourse Mines	260	7	46,000	73,724
Village Deep	180	6	47,000	69,021
	4550	126	965,462	£1,481,536

GROUP PROFITS.

The following are the profits returned for December by the mines controlled by the different groups:—Rand Mines, £215,000; Rand Mines-Eckstein group, £233,201; Gold Fields, £106,552; Farrar—Anglo-French, £90,106; General Mining, £66,341; Barnato, £57,760; Neumann, £52,012; Consolidated Mines Selection, £20,114; Goerz, £14,672; total, £855,758.

For the years 1909, 1910 and 1911 the group working profits are:—

	1909.		1910.		1911.
January ...	£927,161	...	£825,380	...	£843,470
February	858,101	...	787,054	...	791,611
March...	896,779	...	814,672	...	825,498
April	908,080	...	836,310	...	843,685
May	917,968	...	857,344	...	829,702
June	921,201	...	832,505	...	847,641
July	904,475	...	848,767	...	840,471
August...	889,609	...	862,136	...	799,776
September ...	874,281	...	850,174	...	817,223
October	859,761	...	851,792	...	807,237
November ...	870,882	...	852,637	...	824,483
December ...	854,187	...	862,081	...	855,758
Totals ..	£10,682,485	...	£10,080,852	...	£9,626,555

THE LABOUR POSITION.

The following labour figures for December are compiled and furnished by the Chamber of Mines:—Number of natives employed at the end of last month by members of the W.N.L.A. and contractors: Gold mines, 178,282; coal mines, 8,053; diamond mines, 8,914; total, 195,249.

THE OUTPUT IN DETAIL.

The following is our usual monthly output table:—

Company.	Tons Milled.	No. of Stamps.	Total Gold obtained. Fine Ozs.	Total value.
Aurora West	11,049	60	3,208	£13,627
Bantjes Consolidated ...	23,005	60	8,314	35,316
Brakpan Mines	40,090	110	13,473	57,251
Champ d'Or	5,839	45	1,538	6,533
City Deep	37,100	110	15,242	64,744
City and Suburban	24,058	160	10,331	43,883
Cinderella Consolidated ...	16,000	70	5,391	22,910
Consolidated Langlaagte ...	20,861	140	6,316	26,829
Consolidated Main Reef ...	15,040	80	5,715	24,276
Crown Mines	135,100	620	57,443	244,002
Durban Roodepoort	14,175	90	3,543	15,050
Durban Roodepoort Deep .	22,310	100	7,747	32,907
East Rand Proprietary ...	162,876	820	56,391	239,534
Ferreira	23,800	100	8,539	36,271
Ferreira Deep	28,400	160	14,767	62,726
Geldenhuis Deep	58,730	420	20,281	86,148
Ginsberg	12,526	80	4,324	18,367
Glencairn Main Reef ...	19,779	160	3,726	15,827
Geduld Proprietary	12,800	50	4,178	17,747
Jubilee	—	—	16	68
Jupiter	30,700	70	7,617	32,355
Jumpers-cum-Treasury ...	10,150	95	3,990	16,948
Knights Deep	61,950	270	12,788	54,320
Knight Central	27,000	120	7,082	30,082
Lancaster West	22,000	100	5,599	23,783
Langlaagte Estate	51,243	200	13,609	57,807
Luipaardsvlei Estate ...	17,060	60	4,003	17,004
Main Reef West	13,367	80	5,472	23,244
May Consolidated	14,710	100	4,409	18,728
Meyer and Charlton... ...	13,841	75	6,074	25,801
Midas Deep	2,051	20	366	1,555
Modderfontein "B" ...	30,600	80	12,355	52,481
New Goch	31,352	120	7,750	32,920
New Heriot	11,031	70	5,267	22,373
New Kleinfontein	37,150	220	13,297	56,482
New Modderfontein	52,600	180	19,101	81,136
New Primrose	23,350	160	7,886	33,498
New Rietfontein	16,162	120	5,031	21,370
New Unified	9,810	60	3,743	15,899
Nourse Mines	46,000	260	17,356	73,724
Princess Estate	12,587	70	2,948	12,522
Robinson	48,780	250	26,778	113,746
Robinson Deep	44,850	200	18,174	77,198
Randfontein Central ...	208,005	775	60,081	255,208
Roodepoort United	29,104	50	7,734	32,852
Rose Deep	61,600	300	20,959	89,028
Salisbury	7,013	55	1,276	5,420
Simmer Deep	47,300	120	9,989	42,431
Simmer and Jack	65,200	320	18,367	78,018
Simmer East	30,200	130	5,885	24,998
Spes Bona Tribute	5,578	40	1,468	6,236
Van Ryn	39,510	135	12,730	54,074
Village Deep	47,900	180	16,249	69,021
Village Main Reef	34,801	220	17,603	74,773
Vogelstruis Estate	10,210	70	2,778	11,800
West Rand Central	2,226	20	851	3,615
West Rand Consolidated...	29,700	100	7,967	33,842
Witwatersrand	31,530	220	9,288	39,453
Witwatersrand Deep ...	38,830	245	12,509	53,135
Wolhuter	30,000	120	9,657	41,020
Miscellaneous producers ...	—	—	4,208	17,874
HEIDELBERG—				
Nigel	14,200	75	4,727	20,079
Sub Nigel	4,147	30	1,990	8,453
BARBERTON—				
Barrett	—	—	208	884
Sheba-Rosetta	1,845	20	406	1,725
Sheba	5,875	60	2,704	11,486
Worcester Exploration ...	4,600	40	1,128	4,791
LYDENBURG—				
Glynn's Lydenburg	2,812	20	1,517	6,699
Transvaal G.M. Estates ...	11,976	75	6,912	29,318
KLERKSDORP—				
Miscellaneous producers ...	—	—	8,595	36,508
New West Bonanza (Nov.)	1,517	10	567	2,408
New West Bonanza (Dec.)	722	10	322	1,368

Consolidated Gold Fields Group.

The following are particulars in regard to the outputs and profits for the month of December of the undermentioned companies of the Consolidated Gold Fields Group:—

Company.	No. of Stamps.	Tube Mills.	Tons Crushed.	Gold obtained. Fine Ozs.	Total Profit.
Simmer and Jack ...	320	7	65,200	18,367	£37,506
Robinson Dep ...	200	5	44,850	18,068	35,356
Knights Deep	270	6	61,950	12,788	20,728
Simmer East	130	3	30,200	5,885	838
Simmer Deep	120	9	47,300	9,989	4,554
Jupiter	70	6	30,700	7,617	3,661
Luipaardsvlei ...	60	3	17,060	3,520	2,837
Sub Nigel	30	1	4,147	1,990	1,072
Totals	1200	40	301,407	78,224	£106,552

Reserve Gold.—Simmer and Jack, 1,255 ozs.; Robinson Deep, 4,656 ozs.; Sub Nigel, 200 ozs.; total, 6,111 ozs.

The "total profit" shows above includes sundry revenue, viz.: Simmer and Jack, £1,500; Robinson Deep, £325; Knights Deep, £479; Simmer East, £100; Simmer Deep, £717; Jupiter, £318; Luipaardsvlei, £873; Sub Nigel, £305; total, £4,617.

Luipaardsvlei.—Total profit also includes £1,292, net proceeds from 484 ozs. of gold from accumulated slimes.

Robinson Deep.—In addition to the above, 106 ozs. of gold were obtained from the old mill plates, the proceeds of which, viz., £444, have been placed to renewals fund.

Simmer and Jack.—Causes of decrease in profits are: (1) Reduction in tonnage as compared with normal, which in turn has increased working costs. Reduction in tonnage is due to: (a) Scarcity of labour; (b) inefficiency of new native labourers received in replacement of time-expired natives during month of November and following month, this scarcity and inefficiency having been felt the more severely owing to the occurrence of the Christmas holidays. (2) Reduction of grade due to necessity, owing to labour conditions, of working undue proportion of ground in the upper and poorer levels.

Rand Mines Group.

Results of crushing operations of Eekstein companies for the month of December were as follows:—

Company.	No. of Stamps.	Tube Mills.	Tons crushed.	Estimated Working Costs per Ton.	Total Fine Ozs.	Total Estimated Profit.
Modder "B" ..	80	5	30,600	19/ 4	12,355	£22,340
New Modder ...	180	7	52,600	16/11	19,101	35,513
City Deep	110	9	37,100	24/ 4	15,242	18,871
Village Deep ...	180	6	47,900	19/ 1	16.249	22,510
Village Main ...	220	6	34,800	20/ 4	17,603	38,283
Ferreira	100	3	23,800	17/ 0	8,539	15,076
Robinson ...	250	6	48,700	15/ 5	26,778	75,000
Bantjes	60	3	23,005	25/ 4	8,314	5,608
Totals & average	1180	45	298,505	19/ 3	124,181	£233,201

Reserve Gold.—Modder "B," 3,709 ozs.; New Modder, 10,629 ozs.; Village Deep, 5,600 ozs.; Village Main, 4,768 ozs.; Ferreira, 1,970 ozs.; Robinson, 8,709 ozs.; Bantjes, 660 ozs.; total, 36,045 ozs.

Modder "B."—For reasons already stated previously, gold to the value of £4,823 has been added to reserve, which now stands at £15,558.

City Deep.—The tonnage milled comprised 23,450 tons of ore from the mine, realising a profit of £12,104, and 13,650 tons of ore from the dump, realising a profit of £6,767.

Village Main.—The lower tonnage crushed is due to shortage of labour.

Robinson.—The reduced profit is due to decreased tonnage crushed on account of holidays.

Results of crushing operations of subsidiary companies for the month of December were as follows:—

Company.	No. of Stamps Running.	Tube Mills.	Tons crushed.	Estimated Working Costs per Ton.	Total Fine Ozs.	Total Estimated Profit.
Rose Deep ...	300	7	61,600	17/ 7	20,959	£33,993
Geldenhuis Deep	420	7	58,730	23/ 1	20,281	17,002
Nourse Mines ...	260	7	46,000	23/ 5	17,356	18,987
Ferreira Deep ...	160	4	28,400	23/ 2	14,766	29,247
Crown Mines ...	620	26	135,100	19/ 5	57.443	109,608
Durban Rood. D.	100	3	22,310	23/ 7	7,747	6,163
Totals & average	1860	54	352,140	20/10	138,552	£215,000

Reserve Gold.—Rose Deep, 6,127 ozs.; Geldenhuis Deep, 1,580 ozs.; Nourse Mines, 347 ozs.; Crown Mines, 4,824 ozs.; Durban Roodepoort Deep, 218 ozs.; total, 13,096 ozs.

Geldenhuis Deep.—Reduction plants east and west sections can now efficiently treat 60,000 tons per month. By concentrating milling at these points the plant at the northern section can be closed down, resulting in better extraction and working economies.

Ferreira Deep.—The reduced profit is due to lower tonnage crushed owing to the shortage of labour and underground conditions not yet being normal.

Crown Mines.—Sundry extraordinary charges aggregating £3,500 are included in working costs on account of the close of the financial year.

Durban Roodepoort Deep.—The reduced profit is due to the lower tonnage crushed owing to the change over of the mill from steam to electricity and the effect of Christmas holidays.

The Albu Group.

The following are the results of the December operations of the producing mines of the Albu group:—

Company.	Stamps.	Tube Mills.	Tons Crushed.	Total Cost.
Aurora West	60	—	11,049	£10,518
Cinderella Consolidated ...	70	3	16,000	19,676
Meyer and Charlton	75	2	13,841	11,797
New Goch	120	4	31,352	25,035
Roodepoort United	50	4	29,004	24,738
Van Ryn	135	6	39,510	29,363
West Rand Consolidated ...	100	1	29,700	28,597
	610	23	170,456	£149,724

Company.	Cost per Ton.	Total Revenue.	Profit.
Aurora West	19/ 0·4	£13,609	£3,091
Cinderella Consolidated ...	24/ 7·1	22,921	3,245
Meyer and Charlton... ...	17/ 0·5	25,805	14,008
New Goch	15/11·6	32,804	7,769
Roodepoort United	17/ 0·7	32,780	8,042
Van Ryn	14/10·3	54,404	25,041
West Rand Consolidated ...	19/ 3·0	33,742	5,145
		£216,065	£66,341

The working profits for the past ten months of the current year were as under: January, £63,850; February, £57,198; March, £52,316; April, £50,771; May, £53,283; June, £52,344; July, £56,072; August, £55,707; September, £60,353; October, £64,327; November, £65,421; December, £66,341.

Barnato Group.

The following are the results of the December operations of the producing mines of the Barnato group:—

COMPANY.	STAMPS.	TONS.	REVENUE.	PROFIT.
Consolidated Langlaagte .	140	20,861	£26,828	£8,033
Ginsberg	80	12,556	18,366	5,611
Glencairn	160	19,779	15,826	2,934
New Primrose	160	23,350	33,498	17,020
New Rietfontein	120	16,162	21,371	3,851
New Unified	60	9,810	15,900	4,779
Witwatersrand	220	31,530	39,453	15,532
December totals ...	940	134,048	£171,242	£57,760
November totals ..	935	136,620	£170,714	£57,974

Monthly Gross Profits.—January, £53,827; February, £51,965; March, £55,196; April, £54,884; May, £55,476; June, £54,903; July, £52,077; August, £52,771; September, £55,171; October, £57,223; November, £57,974; December, £57,760.

Neumann Group.

The following are particulars of the results achieved by the crushing companies in this group during last month, viz.:—

	TONS.	YIELD.	PROFIT.
Wit. Deep	38,830	£52,389	£16,652
Wolhuter	30,000	40,344	15,215
Main Reef West...	13,367	22,747	7,278
Consolidated Main Reef ...	15,040	23,721	6,500
Knight Central	27,000	29,630	6.200
Treasury-cum-Jumpers ...	—	—	167
Totals	124,237	£168,831	£52,012

Reserve Gold.—Wolhuter, 3,698 ozs.; Consolidated Main Reef, 352 ozs.; total, 4,050 ozs.

Goerz Group.

Results of operations of the crushing mines of the Goerz group for the month of December were as follows:—

COMPANY.		STAMPS.	TUBES.	TONS.	VALUE	PROFIT.
May Consolidated	...	100	—	11,710	£18,604	£8,112
Princess Estate	...	70	—	12,587	12,491	*3,997
Lancaster West	...	100	3	22,000	23,651	2,713
Geduld Proprietary	...	50	2	12,800	17,670	3,847
Totals ...	...	320	5	62,097	£72,416	£11,672

*Loss.

Princess Estate.—The continued absorption of gold by the new plant, as well as the dislocation of work due to the change over and a temporary decrease in the yield, but mainly the very acute scarcity of labour, have adversely affected the results for December. The change over is now completed, but the plant still absorbs gold, though at a much reduced rate. When native labour is obtained, enabling the company to deal with an adequate tonnage, the results should rapidly become normal.

New Kleinfontein.

The following figures show the results of operations on the New Kleinfontein Company's property, Farrar—Anglo-French group, during the month of December:—Stamps, 220; tons milled, 37,150; yield, 13,297 ozs.; net value, £56,030; profit, £20,114; cost per ton, 19s. 4·031d.; reserve gold in hand, 1,866 ozs.

Transvaal G.M. Estates

The output from the mines of the Transvaal Gold Mining Estates for the month of December is as follows:—Central Mines: Tons crushed, 10,000, yielding 5,761 ozs. fine gold, valued at £24,037. Elandsdrift Mine: Tons crushed 696, yielding 816 ozs. fine gold, valued at £3,404. Vaalhoek Mine: Tons crushed 1,280, yielding 325 ozs. fine gold, valued at £1,354. Total value of month's output, £28,795; estimated profit for the month, £15,008; gold reserve, 2,193 ozs.

New Heriot G.M. Co.

The returns for last month's operations at the New Heriot are as follows: Tons milled, 11,030; ounces recovered 5,267; profit, £10,024; reserve gold at date, 1,127 ozs.

Jumpers G.M. Co.

The following is the result of the joint working of the Jumpers and Treasury mines during last month: 95 stamps, working 26 days, crushed 10,150 tons, yielding 2,232 ozs. fine gold from mill, 1,192 ozs. fine gold from tailings by cyanide, 418 ozs. fine gold from current slimes, 148 ozs. fine gold from accumulated slimes; total from all sources, 3,990 ozs. fine gold; value of output, £16,760; joint profit for the month, £1,508; position of joint gold reserve at end of last month, 567 ozs. fine gold.

Swaziland Concessions for Sale.

Mr. Richard Currie, instructed by the liquidators of the Toweli South African Estates, Ltd., will sell at his mart, Johannesburg, on Monday, January 15, the following Swaziland concessions, viz.:—Mineral No. 2, commonly known as the Seaforth Concession, granted on February 9, 1887, for fifty years with right of renewal; rental £50 a year; area, 161,187 morgen 426 sq. roods, or about 500 sq. miles; adjoins the Swazi Coal Mines, Ltd., property on the south, and is within thirty miles of Mialana Station on the Lourenco Marques-Umbelcosi railway line, which, if extended through Swaziland, must pass directly over the concession. A mining engineer, reporting on the concession in 1904, stated that in his opinion the coal on the property is practically inexhaustible, measures having been proved from the southern boundary on the Usutu River to the northern. The analysis of a borehole core from a depth of 100 feet gave the following results: Fixed carbon, 69·00 per cent.; volatile matter, 5·60 per cent.; ash, 25·54 per cent.; moisture, 1·08 per cent.; sulphur, ·78 per cent.; = 100·00. Calorific power, 10·83. Mineral No. 47, commonly known as the Toweli Mineral Concession, is a grant of precious stones and minerals for fifty years, dating from the 12th October, 1886. No rental is payable until machinery is erected for mining purposes. Area, 35,702 morgen 267 square roods, or about 118 square miles. The concession in part adjoins the Transvaal border in the neighbourhood of Piet Retief, the nearest point being some twelve miles from that town and railway. There are many gold-bearing quartz reefs on the concession, which is, practically speaking, unprospected. Specimens taken from outcrops of some of these reefs analysed from ½ oz. to 1 oz. 8 dwts. to the ton.

City and Suburban.

The following are the results from the City and Suburban mine for December: Tons milled, 24,058; gold declared, 10,331 fine ozs.; profit, £17,000; taken from reserve, 209 ozs.; reserve at end of month, 6,230 ozs. The new sands plant and tube mills were completed during the month and are working satisfactorily.

Farms Proclaimed.

The Minister of Mines has approved of the undermentioned private unproclaimed farms in the Magisterial District of Piet Retief, Mining District of Heidelberg, Transvaal Province, being open to the public for prospecting for precious metals on and after the 9th day of January, 1912:—Welkom No. 80, owners Messrs. Norton Bros.; Agatha No. 83, owners Messrs. Norton Bros.; Aapieshoek No. 34, owner New Scotland Land Co., Ltd.; Bongaspoort No. 26, owners Messrs. G. W. van Niekerk and J. W. Spies. Subject, therefore, to the provisions of Chapter I., Part 2, of the Act, prospecting for precious metals under the authority of a prospecting permit may be carried on on such land on and after the 9th day of January, 1912.

A cable message from Vancouver states that a new metal has been found in British Columbia, in platinum-bearing ores, in the Kootenay district. It has been named canadium. It belongs to the platinum group, and is of great value for industrial purposes.

Henry R. Merton & Co.,
LIMITED,
2, Metal Exchange Buildings,
Leadenhall Avenue, London, E.C., ENGLAND.
Cable Address: "MERTON," London.

BUYERS of all Classes of Minerals, Ores of Copper, Tin, Silver, Lead, Zinc, Antimony, Wolfram, Concentrates, Bullion, etc.

South African Representatives—
Messrs. PARRY LEON & Co.,
Mercantile Buildings,
P.O. Box 1101,
Simmonds Street, JOHANNESBURG.

Rhodesian Section.

NEWS FROM THE NORTH.

Problems in the Katanga—Smelting Difficulties—The Question of Coke—Lobito Bay Railway—A Wonderfully Mineralised Area.

From the North comes the important news that the Rhodesia-Katanga Junction Railway and Mineral Company have discovered an extension of the Kalulu Coalfields. It is reported that an additional area of five miles of coal measures has recently been located. This, it need scarcely be said, is of vital importance to the Tanganyika Concessions, although more value would be attached to the statement if it were recorded what the coking qualities of the coal were. For months past prospecting and initial development work has been proceeding, under Tanganyika Concessions Rhodesia-Katanga Junction Railway Company auspices, in the Luano Valley and Kalulu areas, and it appears that large quantities of coal have been located. But of the coking properties of these coals nothing is at present known, and from the fact that the Tanganyika Company are negotiating with the Wankie Colliery for the supply of coke, it must be inferred that the Luano and Kalulu measures are deficient in those elements of which the Katanga copper fields are greatly in need.

* * * *

It is common knowledge that the smelting of Katanga ores, although now proceeding on a large scale, is attended with difficulties which were not anticipated by the management. It cannot, however, be said that these troubles were not foreseen by others. The Tanganyika Consolidated Company has kept technical details of the smelting policy adopted at Lubumbashi (Star of the Congo) and other mines much of a secret, but it is known that a large amount of criticism was directed against the types of furnaces installed and the general scheme of treatment, and that this criticism was not irresponsible and rash, but that it emanated from persons of vast experience in copper smelting. Having regard to the siliceous nature of the ores, smelting on the spot has been determined as the only economical means of treatment, and having regard to troubles probably arising from the employment of types of furnaces unsuitable to Tanganyika ores, and also to the coking difficulties of the company, it does not appear that the metallurgical operations on the spot have so far resulted satisfactorily. Of course, the discovery of a good class of coking coal in the Katanga mineral region would be of enormous importance to the Company, and, whilst it might not prove the panacea for all the Tanganyika concern's ills and maladies, it would go a long way towards solving the Congo copper problem. The use of Southern Rhodesian or South African coke, provided such was of good quality, would perhaps assist matters, and in addition to the Wankie Company, it is known that one or two colliery concerns situated in the Union have commercial designs on the Katanga belt. But in the case of Union of South Africa Collieries the excessive freight charges seem to baulk the prospect—the immediate prospect, at any rate—of a coke trade with Elizabethville and the surrounding mines.

* * * *

The completion of the Lobito Bay Railway would, of course, bring the Katanga in much closer touch with European suppliers of coke and machinery and consumers of copper ore. The construction of the railway from Benguella to Kambove (a distance of about 1,200 miles) has been proceeding for years, but at different times financial considerations have proved too great a barrier to progress, and construction has ceased temporarily. Some little time ago the forging of this great economic link in the true chain of South Central African development was resumed, but of late the promoters of this railway have been singularly silent as to progress, and, be it remarked, few opportunities have in the past been lost of proclaiming the advance of the work.

* * * *

The Katanga is, in fact, on account of its geographical position, a region of extreme economic problems and difficulties. Yet no one will detract from its great mineral possibilities. If further proof of these were needed, a speech made by M. Jadot at a meeting of the Union Miniere held in Belgium a week or two ago, might be cited. M. Jadot, in the course of a most interesting speech, remarked that the cupriferous deposits in the Katanga were very numerous, and were fairly easy to work. They consisted principally of carbonates. Some of the ores contained a notable proportion of cobalt. Silica was found. The yield of copper was very high. So far, it had been ascertained that there were about 100 deposits of copper in the concession, the principal ones being: Kambove, copper estimated at 12 per cent. and 14 per cent.; Star of the Congo, 14 per cent., 15 per cent., and 11 per cent.; Fungurume, 7 per cent.; Likasi, 12 per cent.; Kabale, 12 per cent.; and Kolwezi, 13 per cent. The ore found in the ten principal mines amounted to 10,000,000 tons, containing about 1,000,000 tons of copper. Many tin deposits have been found in the northeast, though working had not been commenced yet owing to sleeping sickness; but the ore was stated to contain the same proportion of tin as the best mines in Malaysia. The company possessed numerous ore deposits containing 60 to 65 per cent. of iron. The coal from the Shiwa mine was bad and had no calorific value. A small portion of the alluvial deposits of the old auriferous lode still remained to be exploited. The deposits contained per ton 5 grammes of gold, 10 of platinum, and 4 of palladium; but there could be no question of working them before the advent of the railway.

Penhalonga G.M. Co.

In the first nine months of its reorganised existence the Penhalonga Mines improved upon the showing made by the last report of the old company to the extent that it made a profit instead of a loss. The gain is, however, very small, the mining profit being £2,230 and the net profit slightly under £1,000 out of a revenue of £55,700. At 21s. 9d. per ton the yield compares favourably with that of 1909, but costs at 20s. 11d. have expanded in a more than corresponding degree, with the result that the profit per ton averages 11d., as against 1s. 4d. in 1909 and 2s. 11d. in 1908. Doubtless, the reduction in the tonnage crushed is responsible for the movement both in revenue and expenses. At the date of the balance sheet the company's cash assets exceeded its liabilities by about £40,000. The ore reserves are estimated at 120,000 tons, irrespective of a considerable block not included owing to disturbances set up by dyke intrusions. In the last preceding annual report—for 1909—the reserves were placed at 150,000 tons developed and 51,000 tons probable, these quantities showing an appreciable shrinkage on the 1908 figures.

CHARTERLAND MINING NEWS.

New Producers—The Selukwe-Columbia—Bucks Reef Development—The Penhalonga Report—An Ambitious Amalgamation Scheme.

Several new producers will shortly help to swell the Rhodesian gold output. Amongst these is the Redrup's Kop mine of the Forbes Rhodesia Syndicate, where five stamps have been erected, and a Chilian mill is about to be installed. Another mine in Matabeleland where further plant is to be erected is the Criterion, which is at present equipped with five stamps, and will shortly have ten heads at work.

* * * *

In presenting their report for the year ended June 30th last, the directors of the Selukwe-Columbia Gold Mine, Ltd., report that the working for the year shows a profit of £18,211. Provision has been made for depreciation of machinery, plant, buildings, etc., to the extent of £3,246, leaving a balance of £14,965, which, added to the credit balance brought forward from last year, gave an available credit balance of £16,061. An interim dividend of 10 per cent., which absorbed £12,500, was paid on July 28th, leaving a balance of £3,561. This sum the directors propose to carry forward.

* * * *

There was a loss of £587 on the operations at the Bucks Reef for November. An official statement issued the other day showed that for the quarter ended last September, the profit was £2,167. At September 30th the ore reserves were estimated at 6,830 tons, of the value of 14·5 dwts., allocated as under:—Bucks, 4,030 tons at 15·9 dwts.; Prestwood, 2,800 tons at 12·4 dwts.; total, 6,830 tons at 14·5 dwts. Since the September report was drafted, the stope between the 2nd and 3rd levels in the Prestwood Block has come into poor ore, consequently the grade for October and November has been lower. The consulting engineer visited the mine during the latter part of November, and he reports that whilst recent developments show an improvement, the ore opened up will not be available for several months.

* * * *

The report and accounts of the Penhalonga Mines, Ltd., covering the period from the incorporation of the present company in October, 1910, to June 30th last, are issued. The working expenditure and revenue account shows a credit balance of £2,230, which is carried forward to profit and loss account, which latter shows a profit of approximately £1,000. The directors have written off £600 for preliminary expenses in connection with the formation of the company, and £840 for repairs to the main shaft. The assets of the company stand in the balance sheet at the nominal sum of £63,854, as compared with £371.123, the figures in the old company's accounts. Acting on the advice of the consulting engineer, the company adopted the policy at the start of extending the main shaft in depth as rapidly as possible, with a view to the exploitation of the mine at lower levels, in the hope that the reef would be found in more settled country, and free from the influences of the dyke. In the tenth or lowest level, the reef now appears in more settled country, and milling operations had resulted in a slight profit. The gold recovered was of the value of £1 1s. 9·343d. per ton, and the working costs averaged £1 0s. 10·615d. per ton, made up of 7s. 11·7d. mining; 2s. 8·9d. milling and crushing; 1s. 8·3d. crushing, sorting, and hauling; 3s. 6d. development redemption; 1s. 9·3d. general expenses; 3s. 1·1d. concentrates realisation; and 1·1d. gold realisation charges. The ore reserves are estimated at 120,220 tons.

* * * *

A circular issued by the Consolidated Gold Fields Rhodesia Company convenes a meeting of shareholders for January 15th, and states that in view of the sale of the assets a new company of the same name will be floated with a capital of three millions in one pound shares, of which 773,750 will be allotted as fully paid to the present shareholders in the proportion of one new share for two old shares. The new company will also allot 1,740,128 shares in exchange for the entire assets of the Rhodesia Exploration and Development Company, the remainder being held in reserve. The Board of the new company will consist of Lord Harris and four directors and the Secretary of the Consolidated Gold Fields of South Africa and three directors of the Rhodesia Exploration Company. Five hundred Scottish shareholders attended a meeting of the Rhodesia Exploration and Development Company at Glasgow, on Monday, in connection with these proposals. Mr. W. Forbes, managing director, who presided, said the amalgamation with the Gold Fields Rhodesia Company would be fair and sound. He emphasised the importance of the company's holdings in the Shamva and Golden Kopjes, and said a big consolidation would be able to meet competition in a more effective manner, and would benefit both sets of shareholders. In view of the extraordinary number of reconstructions and amalgamations which have taken place in regard to Rhodesian concerns of recent years, one cannot feel surprised that a shareholder moved a resolution opposing the amalgamation. He said the juggling manipulations in other South African ventures had sickened Scottish investors. Nevertheless the motion against amalgamation secured only a few supporters, and the amalgamation was agreed to by an overwhelming majority.

* * * *

The annual report of the Gaika Company (under R.E.D. control) has just been issued. In the course of this Mr. H. Ewer Jones, the company's consulting engineer, reviews the mining and metallurgical features of the year, and reports: The ore reserves in the mine at 30th June, 1911, are estimated to be 30,000 tons, value 15 dwts. per ton. The tonnage of rubble milled during the past year is 8,900 tons, and at the date of this report there is estimated to be 4,000 tons of payable rubble in sight. No rubble has yet been milled from the Golden Quarries claims, and therefore the amount estimated to exist on that property, viz., 14,000 tons, remains the same. The gross tonnage, therefore, of ore and rubble is 48,000 tons. Working costs over the twelve months averaged 23s. 5·36d. per ton.

At the date of the last annual report, the 3rd level was the lowest point at which the North reef had been exposed. The policy adopted during the year at this section of the property has been to carry the North shaft down as continuously as possible in order to enable several levels to be developed simultaneously. As a result development work is being carried out on the 3rd, 4th, 5th, 6th and 7th levels. On the 6th level the reef is payable for the full length driven to date, while going North the reef is widening and at the North face is 8 ft. wide, assaying 11½ dwts. On the 7th level the reef has only been recently encountered, and it is satisfactory to note that at this depth it is above the average grade, the value for the 30 ft. driven to date being 18½ dwts., across a width of 4 ft. The development of the Lucy reef, owing to its more erratic character, has not gone ahead so rapidly as has been the case with the North reef. Development work is, however, being carried on at the 4th and 5th levels, and encouraging results are being obtained. Four other points to which attention is being directed are:—(1) The South Kopje, underneath which a crosscut is being put in at the 3rd level. (2) The Magazine Shaft, at which promising results have already been obtained, and a wide body of reef exposed. (3) The Rubble Reef, at which exploratory work is now being carried out with the object of locating the reef below the 2nd level. (4) The Robin Hood South Extension; some surface work is now being undertaken to ascertain whether this reef extends into the Gaika Claims. It is hoped that some, if not all, of this work will result in opening up payable bodies. The milling results for the year have been satisfactory, and show a slight increase in the value of the ore milled as compared with the previous year, though the percentage of extraction is less. This is due to the occurrence of antimony in the North reef, in consequence of which the ore is somewhat refractory. The surface plant has been greatly improved during the last few months, and is now in a good state of efficiency. A slimes plant has been ordered. and when this is in operation the percentage of extraction will be considerably increased. The ore reserves have been increased during the year, the ore developed being in excess of the ore stoped.

Amalgamated Properties of Rhodesia.

A Reuter's cable says the London *Daily Mail* states that at the forthcoming meeting of the Amalgamated Properties of Rhodesia, Ltd., it will be announced that two deals which had been called in question have been cancelled, and steps are being taken to cancel a third.

Tati Concessions.

The report of Tati Concessions, Limited, for the year ended June 30, states that one of the Directors left for South Africa in July last to re-organise the Company's affairs; to move, as might be deemed fit, towards realising some of the Company's assets; and to take steps so that capital may be introduced for the development of the territory, and in particular with respect to the land, timber, and mines. Steady progress is being made towards these ends, as several thousand acres of land have already been sold, and negotiations are in hand with respect to further large quantities of land, and also with respect to timber and mines.

S.A. Prospecting & Concessions Syndicate.

The report of the S.A. Prospecting and Concessions Syndicate, Ltd., covering the period from 1st November, 1910, to 30th June, 1911, to be submitted to the meeting on the 28th instant, states that, owing to the bulk of the expenditure being in Rhodesia, it has been found impossible this year to make up the accounts to the date previously adopted (31st October), and at the same time to hold the annual meeting before the end of the year, so as to comply with the requirements of the Companies Act. Since 31st October, 1910—the date to which the previous accounts were made up—the nominal capital has been increased to £50,000, each share being at the same time sub-divided into two shares of 10s. During the period under review fresh issues of capital have been made at premiums of 10s. and 20s. respectively, whilst last month there was a further issue of shares at a premium of 22s. 6d. The syndicate's expenditure has been devoted during the period under review to the Eureka and Empress-Palmeira properties in the Victoria district of Southern Rhodesia. The item of £20,560 covers the above and all mining expenditure and prospecting operations, and includes the cost of the purchase of five additional blocks of mining claims acquired by the syndicate during the year under review. Six more mining blocks have been acquired since the period covered by the accounts herewith and the purchase price thereof discharged.

Anglo-French Matabeleland.

The report of the Anglo-French Matabeleland Company, Limited, for the year ended 31st May, 1911, to be submitted to the meeting on the 29th instant, states that the profit and loss account discloses a debit balance of £3,694 for the period under review. The available cash or its equivalent, less sundry creditors, amounted to approximately £12,700 at the close of the financial year, as compared with about £10,000 at the 31st May, 1910. The reconstruction of the Penhalonga Proprietary Mines, Limited, was effected subsequent to the closing of last year's accounts. This company's holding, as shown in last year's balance sheet, was 60,850 shares: 10,000 of these were sold prior to the reconstruction being effected, bringing it down to 50,850 shares. The company's total present holding in the Penhalonga Mines is 17,593 shares, which stand in the books at £58,054, a sum much in excess of the present market quotation, and at the annual meeting the Chairman will have some remarks to make on this subject. The company's holding of 2,293 shares in Rezende Mines, Ltd., was sold during the year at a net price of slightly over £2 6s. 4d. per share, which, with certain rights appertaining thereto, realised a net profit of £2,638. The company still retains its interest of £10,000 Rhodesia Railways Three per Cent. Debentures, on which the interest is regularly paid. These Debentures are taken into the books at £4,000, and have at present a market value somewhat over £6,000. Forty claims have been let on tribute to the "D and C" Syndicate for five years ending 31st October, 1915. The development carried out by the tributors during the year amounted to 2,576ft., making a total footage on the "C" mine of 3,576ft. They have expended about £20,000 on plant and development, and have approximately 50,000 tons of 7dwt. ore developed. A 10-stamp mill and cyanide plant started regular work in March, 1911, and during the three months ended 31st May it recovered £2,186 from 2,835 tons crushed, or 15s. 5d. per ton. Since the close of the financial year better results have been obtained, and for the four months ended 30th September 5,405 tons crushed yielded £6,658, or 24s. 7.6d. per ton. It is expected that gradually a larger tonnage will be crushed and an improvement will result, but even on the present small scale the company is receiving as royalty at the rate of about £1,000 per annum. The whole of the company's claim holding stands in the balance-sheet at £224, and it will therefore be seen that this sum in no way represents their value. No work has been done in connection with your other claims during the year, but the manager has instructions, should a favourable opportunity offer, to let some of these on tribute.

King Solomon's Mines.

Sir Alfred Sharpe, who was Commissioner-in-Chief for the British Central African Protectorate for thirteen years, maintains that the mines from which King Solomon dug his gold were situated in Africa. Before the members of the Royal Geographical Society, in mail week, Sir Alfred read a paper entitled "The Geography and Economic Development of British Central Africa." "The idea that King Solomon got his gold from Mashonaland," he said in his introductory remarks, "has sometimes been ridiculed. We know that in those times fleets were sent out from the Red Sea periodically, which returned with gold, apes, ivory, and feathers—all products of Africa. Where would the explorers be likely to go first on leaving the Red Sea? Out into the Indian Ocean, or down the African Coast? They would, of course, follow down the land; and whether or not, in King Solomon's days, he got his gold from the east or the south, it may be taken as certain that the whole East African coast was then known and frequented by traders."

Enterprise Gold Mining and Estates.

The ordinary general meeting of this company was held on Thursday, the 7th December, in London, Mr. Samuel Weil presiding. The Chairman observed that the profit on the sale of shares amounted to only £604 during the year under review. The past year had been totally against profitable operations in the mining market. The general unrest in respect to labour, together with the critical position with which Europe had been faced, had had serious effects upon the investing and speculative public. The disappearance of these disturbing elements would, he believed, regenerate public interest in undertakings similar to their own. Shareholders would notice that the company's revenue from interest and dividends was an improvement on last year's, and in view of the fact that the Giant Mines of Rhodesia, Limited, had now started to pay regular quarterly dividends of 2s., that figure should be even better in next year's accounts. The item "Shares in Rhodesian Companies" was, he thought, very satisfactory, in view of the fact that the market price at June 30 last was upwards of £130,000 above the figure they were taken in on the company's books. This might be looked upon as a further unrealised profit. The result of the year's operations, a profit of £10,047, had been added to the balance brought forward from last year's accounts, making a total of £64,396 available for purposes of dividends, out of which the company had paid dividends Nos. 6 and 7, amounting to £40,000. The balance, £24,396, the board proposed to carry forward. Dealing with the prospects of the different companies in which the Enterprise Company were interested as shareholders, he said that the report and accounts of the Giant Mines of Rhodesia, Limited, just issued, showed that the company was in a very strong financial position. It had cash resources amounting at the date to about £50,000, and the quarterly returns indicated that the working profit was about £35,000, enabling the company to increase its cash reserves considerably after paying the quarterly dividend of 2s. This he thought was of great importance, as it would enable the company to exploit the mine at depth with the object of recovering the ore body below the faulted area. The report and accounts of the New Found Out Mines, Limited, just issued, showed that during the past twelve months developments had been proceeding slowly, but with very satisfactory results. One of the new companies, in which the Enterprise Company had a share interest was the Cam and Motor Gold Mining Company, whose property was opening up remarkably well and in the mining world was considered one of the most important undertakings in Rhodesia. The report of the Hay Gold Mining Company, Limited, showed a working profit of £10,525, from the tailings left by the last owners. Development was being pushed ahead. Having referred to the Rouge Mine, the Venice Property, and the Golden Kopje, he said that during the year the Enterprise Comapny had done only a small amount of work on some of their claims. The majority of these were in the neighbourhood of the Giant and Giant South. The company's engineers advised waiting until results of the operations on these properties were known before embarking on any development programme. Their land during the year had not been touched. It, however, formed a very bright spot in their assets, as land was increasing in value. He was leaving for Rhodesia during the next few days, and the company's interests would be gone into during his visit very carefully. (Hear, hear.) He was informed that the British South Africa Company had decided to interest themselves in mining affairs with the object of improving the commercial side of the company, and that this new company was not intended by them to clash in any respect with the mining houses or individuals engaged in the mining industry, or that their undertaking would be specially favoured in consequence of the administration of the country being in their hands. He was not apprehensive that they would be in any way favoured, but nevertheless an invidious position was created. He desired to draw attention to the fact that they were already in receipt of considerable revenue in the way of royalties, and would further point out that the royalties received by them did not go in the relief of taxation. He concluded by moving the adoption of the report and accounts.

Colonel A. Weston Jarvis seconded the motion, which was adopted.

Our Twenty-First Birthday.

Unique Advertising Opportunities.

This year the "SOUTH AFRICAN MINING JOURNAL" celebrates its Twenty-First Birthday.

To mark the occasion a SPECIAL ANNIVERSARY ISSUE which will deal with every conceivable aspect of Mining, Metallurgy, Finance, Engineering, Railways, Harbours and Subsidiary Industries throughout the Sub-continent, will be issued in May next.

The Leading Mining and Financial Men of Europe, Africa and America will contribute to this Special Number, which will Establish a RECORD in South African Illustrated Journalism.

WORLD-WIDE CIRCULATION IS ASSURED.

Do You Wish to Push Your Business?

Apply at once for Advertisement Rates to the

Manager, "S.A. Mining Journal,"

Box 418. **Telephone 913.**

119-126, Exploration Buildings, Johannesburg.

THE ADVERTISING SPACE IS LIMITED AND EARLY APPLICATION IS ESSENTIAL.

CASCADE MOTORS FOR MINE HAULAGE.

Many Advantages Reviewed—Some Special Characteristics Claimed.

The following article, reprinted from *Engineering*, gives an interesting description of the Cascade Motor, the merits of which are now becoming known on the Rand.

Although the many excellent qualities of continuous-current motors render them, in some cases, superior to all other agents for transforming electrical into mechanical energy, the simplicity, strength, and other special properties of polyphase induction motors enable a strong case to be made out in favour of these machines, particularly when machinery is to be driven at a practically constant speed. The ordinary induction motor is essentially a constant-speed machine, as, although its speed may be varied by means of resistance connected through slip-rings to the rotor circuit, the power taken from the mains is unaltered for a given torque. This means that energy proportional to the reduction in speed must be absorbed by the resistance, so that this wasteful system of speed regulation is only available for short periods. There is, however, a method by which induction motors may be made to run efficiently at different speeds. It is carried out by coupling two of them "in cascade." If the rotor windings of one motor be connected to the stator of a second exactly similar machine, which is also coupled mechanically to the first, the two machines can be started up by means of a resistance in connection with the rotor of the second machine, and will then run at half the normal speed of either, or at the same synchronous speed as a motor having twice the number of poles of each separate machine. Similarly, if an eight-pole motor be connected in this way to a four-pole motor, the two machines will run "in cascade" at a speed equal to that of a single machine with twelve poles. Since either the rotor or the stator of an induction motor may produce the rotating magnetic field on which these machines depend for their action, it is easy to see that instead of connecting the stator of the second machine to the rotor of the first, the effect would be just the same if the two rotors were connected; the starting resistance would then be inserted in the stator circuit of the second machine, and thus the use of slip-rings could be avoided. The cascade arrangement can be carried a further step by combining double stator and rotor windings in a single machine, but, as usually carried out, this system tends to have a comparatively low efficiency, owing to large magnetic leakage and copper losses.

In the spring of 1907, in a paper read before the Manchester branch of the Institution of Electrical Engineers, Mr. L. J. Hunt described a special form of winding he had invented, which, while producing the double rotating field required by the cascade system, greatly reduced the losses obtained with two independent windings, and so made it possible to retain the advantages of the cascade system in a motor having practically the same efficiency as that of an ordinary slip-ring induction-motor. It will suffice for our purpose to say that the rotor windings were such that, when acted on by a rotating field having a certain number of poles, they produced a secondary field with a different number of poles. The windings were thus equivalent in effect to two independent windings, but they had the very important advantage that a number of bars could be omitted, since the currents in them, due to the two different fields, neutralised each other. The omission of these bars considerably increased the efficiency, diminished the cost of construction, and had other practical advantages. The stator windings consisted of two sections in parallel in each phase, so arranged that current circulating in them could produce two different numbers of poles, the numbers being so chosen that the fields did not interlink, except through the rotor. The sections were directly connected at certain points, and at intermediate points connections were brought out to the starting resistances. Since no primary difference of potential existed between the ends of these connections, the currents circulating through them were entirely due to the secondary field produced by the rotor. The results obtained were thus similar in effect to those obtained by employing a starting resistance in the stator of the second of two cascade-connecting machines, as suggested above. The fact that the starting resistances were connected to the stator windings rendered the use of slip-rings unnecessary for single-speed motors, and thus we had a machine which, while possessing all the characteristics of a slip-ring motor, avoided the difficulties which may arise from the slip-rings. The avoidance of these details is certainly a desideratum where motors have to work in dusty places, such as mines and quarries. Also the resistance of the brushes, leads, etc., in an ordinary machine may be of the same order of magnitude as that of the whole rotor windings, so that the elimination of this source of loss is worth considering.

Cascade motors are essentially slow-running machines, and this characteristic permits gearing to be entirely dispensed with in some cases, and in others considerably simplifies the problem of speed reduction. Very low speeds can be obtained with resistance in circuit, owing to the even turning moment produced by the two fields; for instance, a 50 horse-power motor whose normal speed is 490 revolutions per minute has been found to run steadily at two revolutions per minute while developing its maximum torque; but, of course, considerable energy is wasted in the resistance when running under these conditions.

If these machines are required to run at more than one efficient speed—that is, without waste of energy in resistances—a modified form of rotor winding, with slip-rings, is employed; for many purposes, however, a short-circuiting device will answer the purpose of the slip-rings. The two-speed rotor has all its slots filled with bars, and the added conductors are arranged with some of the others to form a symmetrical winding, the ends of which are brought out to slip-rings. When these slip-rings are open-circuited, the added bars have no effect, and the rotor runs at cascade speed; but when the slip-rings are short-circuited, no secondary field is produced by the rotor, and the machine runs as an ordinary motor at non-cascade speed. By varying the resistance in the rotor-circuit speeds between cascade speed and top speed can be obtained, while lower speeds can be got by means of the stator resistances. If the intermediate speeds are not required, the arrangements can be somewhat simplified, the stator resistances being replaced by a six-pole short-circuiting switch. The motor can then be started and run up to top speed by means of an ordinary three-phase starter connected to the slip-rings, the stator switches being open. If it be required to run at the lower speed, it must be started by means of the rotor resistance and the stator switch closed, the rotor switch being afterwards returned to the "off" position. The motor can be changed from cascade to top speed, or *vice versa*, without opening the main switch.

Among the many uses to which a two-speed motor can be put may be mentioned the driving of mine-ventilating fans, which are often required to run at a lower speed during week-ends. For this duty, however, a special stator winding has been evolved, as, since the torque required to run the fan at a lower speed is much less than for normal speed, the power-factor of a machine with windings of the form usually employed would be poor. To overcome this objection, the stator winding is provided with three terminals, which, when short-circuited, change the effective number of conductors, so that the motor works with a high power-factor at much less than its normal torque. This type of winding is used in all cases where the torque is required to fall off with the speed. When a machine is required to run at three efficient speeds, the mains are connected to the intermediate points on the stator windings by means of a change-over switch, thus altering the number of primary poles. Only one rotating field is produced, and the motor runs at a speed corresponding to the number of poles in this field. For example, a machine having eight-pole and four-pole stator windings would run as a twelve-pole machine with the rotor open-circuited, and as an eight-pole machine with the rotor short-circuited, while by means of the change-over switch a speed corresponding to four poles could be obtained. A large number of single-speed and multi-speed motors on this principle have been built by the Sandycroft Foundry Company, Limited, of Chester, for driving pumps, air-compressors, fans, coal-cutters, haulage gears, and other machinery.

The application of the cascade motor to mine haulage was due to Mr. Williams-Ellis, who described the system in a paper (to which we are indebted for some of the foregoing particulars) read before the Association of Mining Electrical Engineers. In this paper the author expressed the opinion that two-speed motors would be advantageous for mine winding and hauling work, since the losses in the resistances during the period of acceleration would be much less with two-speed machines than with ordinary induction motors. With machines of the latter type, if the pull on the rope, and therefore the torque, be constant during the acceleration of the load, the power input over the whole period will also be constant and equal to that required to produce the same torque when the motor is running at full speed. Since the output from the machine is proportional to the speed, the mean power production, neglecting internal losses, etc., will be only one-half of the power supplied, so that the remaining half of the energy is wasted in the resistances. With a two-speed cascade motor, under the same conditions, the power input from rest up to the intermediate speed is only that required to produce the given torque at cascade speed, and thus nearly half the energy wasted in a single-speed machine can be saved. It has also been suggested that the characteristic might be utilised to smooth out some of the peaks in the load curve of the power-station, an automatic device being employed to change to cascade connections, and allow the motor to slow down when the load was travelling up a steep gradient. When the pull on the rope had fallen to its normal value, the machine would automatically run up again to full speed. Cascade motors have certainly several interesting and useful properties which seem to render them superior to ordinary induction motors for many purposes, so that users of polyphase power, in mines and quarries especially, may find the special characteristics of these machines worthy of further investigation.

New Vaal River Diamonds.

In December 1,646½ carats of diamonds were registered by 113 diggers on the Vaal River Estate at the company's offices, Sydney, and realised £11,222 7s. 6d.

Kroonstad Diamonds.

The rough and uncut diamonds registered by the Resident Magistrate of Kroonstad during the month of December were 23,007½ carats, value £21,953 2s. 1d.

London and Rhodesian Mining and Land Co.

During the twelve months ended the 30th June last the paid-up capital of the London and Rhodesian Mining and Land Company was increased from £350,000 to £377,000, irrespective of nearly £39,000 received in the shape of premiums. A net profit of £21,000 was made, as against £2,200 in 1909-10. Investments figure in the balance-sheet at £293,400, the value of the quoted shares being £286,500; cash stood for £22,000, debtors £36,000, creditors £30,000. Apart from the acquisition of some Giant shares and an increase in the holding of Imperial Gold Mines of Rhodesia, very little change has taken place in the company's interests.

United African Lands.

The report of the United African Lands, Ltd., to 30th September last, submitted to the meeting on the 28th ultimo in London, states that the report of Mr. Fritz Elkan, the manager in South Africa, to 30th September last, was sent to the shareholders with the notice of the meeting for the reconstruction of the company, held on 30th October last, and gave the position of the company in South Africa to that date. The directors regret that the reconstruction scheme has been obliged to be withdrawn owing to the opposition of some of the largest shareholders, who expressed a desire for a form of reconstruction without an assessment. This view is engaging the attention of the directors. The net loss for the twelve months now under consideration has been reduced to £1,048, out of which sum interest on the loan advanced by the Standard Bank of South Africa, Ltd., amounting to £427, was paid. The directors are of opinion that further economies can be effected in the future, and with an improvement in the receipts they hope that after the next twelve months the company will be self-supporting.

Kolmanskop Diamonds.

The output of diamonds from the Kolmanskop Diamond Mine for the month of December was 12,061 carats.

Modderkraal to be Proclaimed.

It is the intention of His Excellency the Governor-General to proclaim at an early date as an alluvial digging, in pursuance of section *fifteen* of the Precious Stones Ordinance, 1903, of the Transvaal (No. 66 of 1903), a portion of the farm Modderkraal No. 59, District Wolmaransstad, in the Mining District of Klerksdorp, in extent approximately 600 morgen.

Natal Coal.

The following are the official coal return from Natal for the month of November: Natal Navigation, 32,347 tons; Durban Navigation, 24,144 tons; Hlobane, 20,183 tons; Elandslaagte, 16,176 tons; Burnside, 17,024 tons; Glencoe (Natal), 14,183 tons; St. George's, 14,314 tons; Natal Cambrian, 12,891 tons; Utrecht, 12,658 tons; Hatting Spruit, 6,504 tons; Dundee, 7,097 tons; Newcastle, 3,919 tons; Natal Steam, 4,373 tons; Ramsay, 5,302 tons; Ballengeich, 4,866 tons; Talana, 888 tons; Dewar's Anthracite, 451 tons; Star, 268 tons; Makatees Kop, 7 tons, total, 208,230 tons; corresponding month, 1910, 177,744 tons. Bunker coal, 102,125 tons; coal exported, 32,533 tons; total, 134,658 tons.

ECONOMY IN FUEL.

Users of coal for domestic business or steam-raising purposes are now recognizing the saving of time and money effected by using only the best Transvaal coal and this coal is mined from the Vaalbank (Middelburg) Colliery.

This coal, which can be obtained at about the same price as inferior coal, gives the highest heating value of any Transvaal coal, burns regularly and gives a minimum of ash or soot, and the fact that a trial order is always followed by repeat orders confirms the favourable opinions expressed by the present users of the coal.

Supplies of Vaalbank coal can be obtained from:—Johannesburg—A. E. Dunstone, Box 5034; The Holmes, Darcy Coal Agency, Box 5176; Benoni—Lindsay & Pirie, Box 5; Unsted & Holland, Box 316; Webb & Co., Box 370; Boksburg—J. D. Campbell, 105, Commissioner Street; Germiston—C. A. Margach, Box 223; Heidelberg—L. Lowenstein, Box 175; Bloemhof—J. Leviton; Kimberley—A. G. Freeman, Box 154; Pretoria—R. Butler & Co, Box 747; J. Franklin, Box 51; Middelburg—H. Laver & Co., Box 94; Lydenburg—M. McGee, Box 24; Pilgrim's Rest—J. H. Alcock, Box 36; Barberton—D. Wasserberg & Co., Box 167; Delagoa Bay—I. Sangiorgio-Borruso, Box 366; Pietersburg—B. Herman, Box 36.

THE WEEK IN THE SHAREMARKET.

Quiet—Easier After a Slight Improvement—Still Waiting.

After some little show of activity, the market again fell away on Thursday. Labour troubles in England and the Cabinet crisis in France are given as the reasons for the check to improvement, and it is clear that until London gives a lead things must remain deadly dull here. The native labour position ought to be showing signs of improvement owing to the loss of native crops, and the next few months promise to add considerably to the supply. Tin stocks remain firm with little business, the smaller diamond counters are in some request, but the gilt-edged Rand stocks show few changes, as the following list proves:—

	Friday, 5th.	Sat., 6th.	Monday, 8th.	Tuesday, 9th.	Wed., 10th.	Thurs. 11th.
African Farms ...	17 2B	17 3B	17 6	17 3	17 3	16 9
Aurora West ...	...	...	7 6B	7 6B	...	7 6B
African-European In.	...	11 0S	...	11 0S	11 0S	11 0S
Apex Mines ...	...	...	...	...	36 0B	-
Bantjes Consolidated	23 9	24 3B	24 0B	23 6B	23 9B	23 6B
Benonis	10 9B	10 9B	10 6	9 9	9 9	9 6
Blaauwbosch ...	20 0S	...	...	...	...	...
Bushveld Tins ...	...	0 8	...	...	0 8B	0 8B
City and Suburban ...	46 6S	45 6B	45 6B	45 9B	45 6B	45 9B
City Deeps	48 0	50 0	51 0	50 9	51 3B	50 0B
Cloverfield Mines ...	4 2	4 2B	4 0B	...	4 0B	...
Cons. Langlaagtes ...	17 6B	...	17 0B	17 0S	17 3B	17 3B
Cons. Main Reefs ...	16 3	16 0B	16 0B	16 3B	16 0S	16 3B
Clydesdales	12 0B	...	12 0B	12 0B	...	12 0B
Coronation Freeholds	0 10S	...	0 10S	...	...	...
Concrete Cons. ...	0 15	16 0B	...	...	...	17 0S
Cassel Coals	...	...	10 6B	...	...	...
Con. Investment ...	...	...	21 6B	21 6B	22 0B	22 0B
East Rand Cent. ...	8 0B	8 3B	8 3B	8 3B	8 0B	8 0B
East Rand Coals ...	2 7B	2 7B	2 7B	2 8B	2 8B	2 8B
East Rand Deeps ...	2 3B	...	...	...	2 3	...
East Rand Props. ...	65 6B	...	66 0B	65 0B	67 3	65 6B
East Rand Deb. ...	£98S	£98S	£98S	£95B	£96½	£95
Eastern Gold Mines	2 2	2 0B	1 9B	2 0B	2 0B	2 0S
Govt. Areas... ...	22 3	22 6	22 0B	22 0	21 6B	21 6
Glencoe (Natal) Colls.	6 0B	6 0B	5 9B	6 0B	6 0B	...
Glynn's Lydenburgs	...	40 0S	...	...	40 0S	40 0S
Ginsburgs	28 6B	29 0B	29 0B	29 0S	29 6B	29 0B
Jumpers	...	13 0B	...	14 0B	16 0S	...
Jupiters	8 6B	9 0	8 6B	9 0	...	...
Kaalfontein Diamonds	0 6B	0 6B	0 6B	0 7S	0 5B	0 5B
Klerksdorp Props. ...	2 6B	2 6B	2 6B	2 8B	3 1	3 3
Knight Centrals ...	15 6B	15 6	15 3B	15 6B	16 0B	...
Lace Props.	3 0B	3 0B	3 1B	...	3 2B	3 3B
Lydenburg Gold Farm	8 0B	8 0B	8 3	8 4S	8 3B	8 3B
Monomotapas ...	10 0S	10 0S	10 0S	10 0S	...	10 0S
Main Reef Wests ...	24 0B	24 3B	24 3B	25 6B	26 0	25 6B
Modder B's	54 0	53 6	53 0S	53 6	53 9B	54 0S
Midas Deeps ...	1 3B	1 3	1 3B	1 3B	1 2B	1 2B
Middelvlei Estates...	2 0B	2 1B	2 0B	2 0B	2 0B	2 0B
New Eras	5 6B	5 6B	5 6B	5 6S	5 6B	5 6B
New Kleinfonteins ...	27 3B	27 0B	27 0B	...	27 9B	27 0B
New Rietfonteins ...	11 6B	12 0	12 6	...	12 6	12 0
Natal Navigations ..	...	15 6B	...	...	...	15 3B
New Heriots ...	...	...	96 0S	...	95 0S	...
New Unifieds ...	...	...	18 0B	18 0S	19 6	18 0B
New Boksburgs ...	...	2 0S	2 0S	2 0S	2 0S	2 0S
Orange Diamonds ..	1 6B	1 7B	1 7B	1 9B	2 3	2 6
Pretoria Cement Co.	55 6S	55 6S	54 6B	55 0	54 6B	...
Premiers Def. 2s. 6d.	162 6B	162 6B	162 6B	...	162 6B	162 6B
Rand Nucleus ...	3 0B	3 0B	3 0B	...	3 0B	3 0B
Randfontein Estates	33 6	33 0B	33 3B	33 6	33 6	33 0
Robinson Deeps ...	...	55 6B	55 0B	...	55 0B	...
Rooiberg Minerals ..	26 6B	...	26 0B	27 0	26 9B	26 0B
Rand Klip	...	...	4 0S	...	4 0B	4 0S
Roberts Victors ...	20 0B	20 0B	22 6	21 3B	23 0	...
Rood. U.M.R. ...	22 6B	...	22 6	21 0B	...	...
Rood. Durban Deeps	29 0	...	...	...	...	...
Simmer Deeps ...	5 0S	4 3B	...	3 6B	3 6B	3 9B
South African Lands	4 1	4 1B	4 1B	4 2B	4 2B	4 1B
S. Randfontein Deeps	3 6B	3 3B	3 0S	2 9B	...	3 0B
Sub Nigels	...	...	6 9B	6 9B	6 9B	6 9B
S. A. Breweries ...	38 6B	38 6B	38 6B	40 0S	38 6B	38 6B
Springs Mines ...	10 6S	...	...	...	8 6B	11 0S
Trans. G.M. Estates	45 0B	...	46 6	46 0B	...	...
Temple Tins	2 6B	2 9B	2 9B	2 6B	2 9B	2 9B
Van Ryn Deeps ...	7 10B	7 11	7 10B	7 9B	7 9B	7 9B
Village Deeps ...	42 6B	42 6S	42 6B	42 0S	43 0B	42 6B
Witbank Collieries...	42 0S	42 3B	42 3B	42 6B	42 3	42 6
Wolbuters	23 0	22 9B	22 9B	22 6	22 6B	22 3B
Wit. Deeps	55 0B	56 3B	57 0S	55 6B	56 9B	...
West Rand Est. ...	4 0S	...	...	...	...	...
Zaaiplaats	75 0B	75 0B	75 3B	76 0B	76 6B	76 6B

B Buyers. S Sellers.

In a Union Government Gazette Extraordinary is published the text of seven new Bills. **Seven New Bills.** (1) The Betting Bill. (2) A Bill to make further provision in relation to the administration of justice. This Bill consists mainly of provision for securing the attendance of witnesses throughout the Union, and also provides for the abolition of the Griqualand High Court and the holding of a circuit court. (3) A Bill for the organisation and discipline and payment of retiring allowances and financial benefits to persons in the employment of the railways and harbours. (4) A Bill for regulating the control and management of railways, ports and harbours of the Union. (5) A Bill for the consolidation and amendment of the forest laws. (6) A Bill for the settlement in accordance with native customs of certain disputes between natives. (7) A Bill for the consolidation and amendment of laws relating to arms.

INVESTORS' DIARY.

The following company meetings have been announced:—

Feb. 20.—Premier (Transvaal) Diamond Mining Co.
Feb. 28.—East Rand Prop. Mines.
Feb. 29.—Worcester Exploration Co. (Worcester C.P.).
March 6.—Crown Mines.
March 7.—Rose Deep.
March 8.—National Bank (at Pretoria); Geldenhuis Deep
March 12.—Durban Rood. Deep.
March 13.—Robinson G.M.
March 14.—Bantjes Con. Mines.
March 15.—Village Deep.
March 20.—City Deep.
March 21.—Ferreira G.M.
March 22.—Modder "B."
March 26.—Cassel Coal Co.
March 27.—Rand Mines.

E. J. MOYNIHAN,
CONSULTING ENGINEER.
PLANS, SPECIFICATIONS, REPORTS AND ADVICE, MINING EQUIPMENT, STRUCTURAL WORK AND FINANCIAL ADVICE.
10, ANGLO-AUSTRIAN BUILDINGS. Box 2061.
59

The BEDE METAL & CHEMICAL Co.,
LTD.
Telegrams; "Bede, Hebburn."
Copper Smelters and Refiners,
HEBBURN-ON-TYNE, England.
Are open to purchase Copper Ores, Precipitates, Copper Scale, Scrap Copper, or other Furnace Material.
CORRESPONDENCE INVITED.

Telephone 217. Box 2127.
GEORGE McINNES, B.Sc.,
Importer of Electrical Supplies for the Trade.
Sole Agent for the "ARCONA" Metal Filament Lamp.
MARSHALL SQUARE, JOHANNESBURG.
ESTABLISHED 1892.

CYANIDE of SODIUM, 120 %
ZINC DUST, SHEETS and SHAVINGS.
MABOR FUSION CUPELS and MATERIAL.
3 STAR CRUCIBLES and CRUCIBLE BARS.
3 STAR LITHARGE.
HARDWOOD MINING POLES and SAWING TIMBER.
"BRUNSVIGA" Calculating Machines.

RICHARD HEYMANN & CO.,
73/5 Exploration Buildings.
P.O. Box 2425.
Telephone 351.
Telegrams: "Extra."

Double Helical Gears
CUT DIRECT FROM THE SOLID WITH CONTINUOUS TEETH.
Local Representatives—
BELLAMY & LAMBIE, Consolidated Building
P.O. Box 453, Johannesburg.
See Last Week's Advt.

ON ADMIRALTY LIST.
IMPROVED BOURDON GAUGES.
BUCHANAN PATENT COUNTERS.
IMPROVED ENGINE INDICATORS.
HANNAN & BUCHANAN,
75, Robertson Street, GLASGOW, Scot.

FACTS AND FIGURES
of over 2,500 Securities quoted on the London Stock Exchange are given in the
"INVESTOR'S BLUE BOOK," 1912 EDITION
Bankers, Brokers and Investors say that it is indispensable to them. It is a book which gives you the **Essential Facts** and **expresses opinions.** It is not a mass of colourless information of no practical value. It contains more real information regarding the securities with which it deals than any other book of its kind ever published. Its facts and figures have been **Officially Checked**; its opinions are unprejudiced and **Absolutely Independent**. It answers many of the questions you are from time to time asking in regard to financial affairs. It is published at 3s. 6d. by the "Investor's Chronicle," Tower Chambers, London Wall, London. England.
Explanatory Pamphlet on Application.

Notice to English Advertisers and Subscribers.

NOTICE is hereby given that Mr. G. LEIGHTON HARE, of London Wall, E.C., has been appointed the Sole Manager in the United Kingdom of this "Journal," to whom all correspondence in connection with business affairs of the paper should be addressed.

No contracts given to canvassers for advertisements become binding on the "Journal" until they have been duly confirmed by Mr. G. Leighton Hare, neither will any receipts for money paid on behalf of such contracts be recognised unless signed by him. Any similar authority granted to any person or persons previous to this notice is hereby cancelled.

By order.

Notice to Advertisers and Subscribers.

NOTICE is hereby given that Mr. C. G. GALL'S connection with this "Journal" as Canvasser, ceases and terminates as and from the 31st December, 1911.

By order.

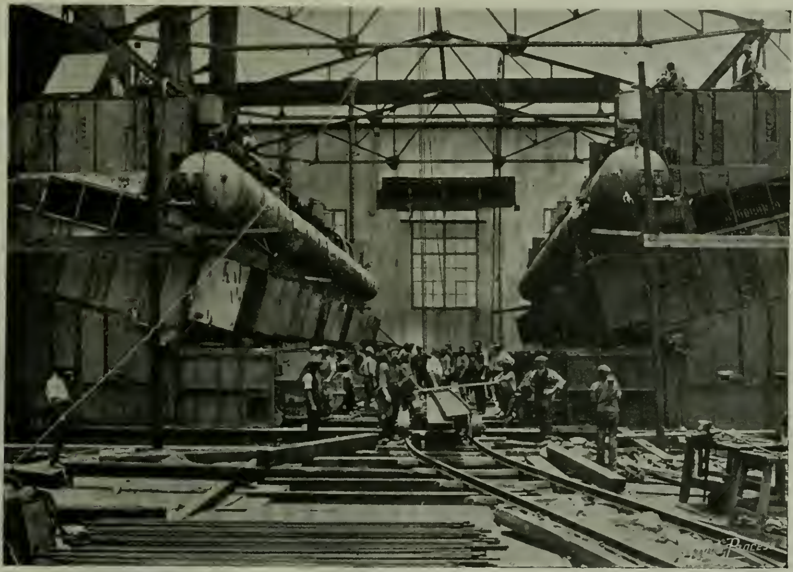
Engineering Notes and News.

A New Tailings Pump.

In connection with the new cyanide plant which is being put in at the Gaika mine, Matabeleland, it is interesting to note that a Kershaw tailings pump is being installed. This pump will elevate the mill tailings from the battery to the spitzkasten, a height of 38 feet. So far as we know, this pump is new to South Africa, though well known in Australia, and its effectiveness will, therefore, be a matter of considerable interest.

Friction in Air Pipes.

The latest Bulletin of the School of Mines and Metallurgy, University of Missouri, deals with friction in air pipes. In a former bulletin the results of experiments by Messrs. A. Park and H. K. Peterson on friction in small air pipes were given. This work was continued and extended during the session of 1910-11 by Messrs. E. T. Allen and B. H. Cody as a thesis for graduation. The work was directed, carefully supervised and checked. Indeed, the task proved too great for the time assigned the students and much of it was done independently. The conclusions reached are as follows:—" While we do not place great stress on the numerical results here published, we believe the matter is in advance of anything we have been able to find published elsewhere. The experiments were made with all reasonable care that practical conditions be realized. While we are disappointed in the irregularities developed in the small pipes (under one inch) and their connections, the conclusions may be none the less valuable, and possibly final, if we have proved that for such small pipes, taken without special treatment or selection, a reliable coefficient cannot reasonably be expected. This might have been anticipated when we note that the friction (or resistance) varied inversely as the fifth power of the diameter. Evidently, then, a very little variation in the diameter or a small obstruction in such pipes will affect the resistance radically. We are then impressed with the importance of specifying that where small pipes must be used, they be ' plugged and reamed.' "



New Boiler Plant at Rosherville Power Station.

A Tailings Elevator on a Dump.

By W. F. Boericke.*

Where it is impossible to dispose of tailings by gravity, on account of lack of slope, or absence of a stream sufficiently large to carry the tailings without damming its channel, bucket elevators are a usual recourse. These vary in height from 25 to 50 feet, or more, and lead from the side of the mill by open launders to the place where it is desired to pile the tailings. In time, of course, the pile will rise so high that it is impossible to give the launders sufficient slope to carry the tailings. In such a case a second elevator, known locally as a booster, may be built on top of the tailings pile, and the flow from the launders be re-elevated and so distributed over another area. This is usually more convenient than building the original elevator, as it saves a shutdown, and insures freedom from worry over tailings disposal for a longer time. It is particularly convenient where electric power is available, and the booster elevator can be driven independently by a small motor. In some cases, where the distance between mill and booster does not exceed 500 feet or so, rope drive from the line shaft of the mill is successfully used. The data in the following case may prove interesting to one who is confronted with a similar problem of tailings disposal. The mill in question treated 400 tons of rock daily, making a recovery of about 10 per cent. in concentrates. The crushed ore was screened through a $\frac{1}{2}$-in. revolving trommel, and the tailings, having passed over the rougher jig, were lifted by the ordinary bucket elevator, and discharged into a launder, lined with semi-circular iron troughing, and sloping $1\frac{3}{8}$ in. per foot. About 400 ft. from the mill the booster was built on top of the tailings pile. To insure stability, a concrete foundation was used, and the tailings well packed around. The building had two sections, separated by a partition, one having space for the boot, elevator belt, &c., while the other had a ladderway and contained the driving belt that ran from the top pulley to the motor in the inclosed motor-house. The dimensions of the building were—length 12 ft., width 7 ft., total height $30\frac{1}{2}$ ft. Centre to centre distance of top and bottom pulleys was 27 ft. The boot was $2\frac{1}{2}$ x 12 ft., with a depth of 3 ft. It was aimed to have the launders discharged into the cups on the belt as much as possible, as considerably less power is needed in such case than where the cups must scrape the tailings from the water. The elevator belt was of rubber, 16 in. wide, and 62 ft. long, carrying iron cups 16 x 6 x 6 in., re-inforced by pieces of back leather and bolted through. The cups were spaced

---

* Mining Engineer, Mineral Point, Wis., in the " Mining and Engineering Journal," New York.

1 ft. apart. The driven or cup pulley at the top was wood lagged with pieces of $1\frac{1}{2}$ x 3 in. plank, to increase adhesion, the belt naturally being wet at all times. This made its diameter 33 in. The cups discharged into a lip on top, $3\frac{1}{2}$ ft. deep, from which the launders ran. The elevator was driven by a 60-cycle, 220-volt, 7.5-h.p. induction motor running 900 r.p.m., which drove a 50-in pulley at top of the booster with a 10-in. belt. This was cut down by gearing to give the necessary belt speed, which should be the same as the mill elevator; in this case 390 ft. per min. The power consumption averaged 3.6 kw. (4.8-h.p.), which is not excessive, the pulp being about 1 : 5, and the elevator handling 360 tons in eighteen hours. Such an elevator as this can be erected in a short time, and after once being in running order needs absolutely no attention, save occasional oiling of the bearings and renewal of the elevator belt when worn out. The tailings after leaving the launder are partially dewatered before they are allowed to run out. For this purpose a cubical box 3 x 3 x 3 ft. is used, the excess of water and slimes overflowing near the top, while the heavier tailings are discharged through spigots at the bottom. If tailings carry a large proportion of water they will be distributed over a wide area, on a gentle slope. In this case, the ground available for stacking was limited; hence it was desirable to pile them as steep an angle as was possible.

New Railway Rolling Stock.

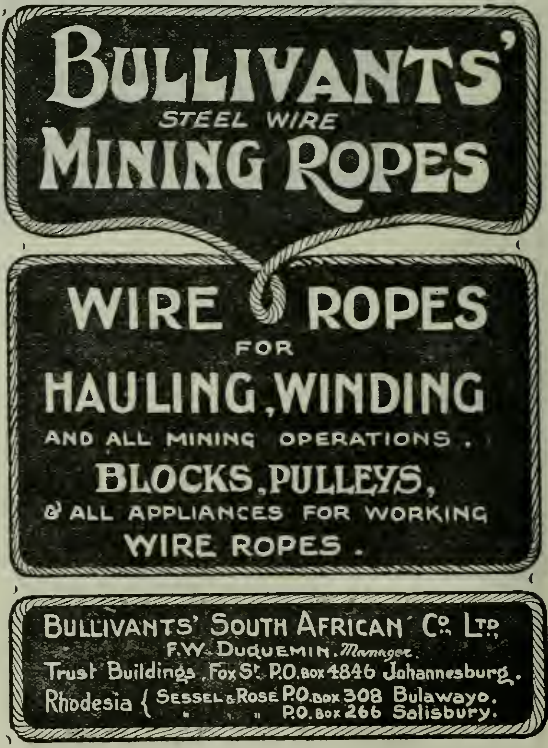
Last year 26 engines, 149 passenger vehicles and 581 wagons for goods and livestock were put into service on the S.A.R. for the first time, while 121 older trucks have been converted to different uses, and therefore rendered more beneficial. All this has entailed an outlay of between £700,000 and £800,000. The railway workshops at Pretoria, Bloemfontein, Durban, East London, Uitenhage and Salt River have been working to their fullest capacity. The engines have of course been imported, but out of the 149 passenger vehicles only 39 were manufactured in England, and these were actually erected here. Of the wagons for other classes of traffic, namely, 581, the bogie trucks (331) and the composite hoppers (55) were built in England and erected here. The others were made in the South African workshops. The 55 hoppers mentioned represent a new type of railway vehicle for South Africa. Indeed the vehicle has been specially designed for use in this country by Mr. W. W. Hoy, the general manager. It is 46 feet in length, and is capable of carrying 80,000 lbs. of coal or 100,000 lbs. of, say, rails or heavy timber. About 50 additional engines, 150 passenger vehicles and 1,000 trucks of different descriptions are on order, and most of the coaches and trucks at any rate will be delivered during the next twelve months. In all probability, also, Parliament will be asked to sanction another large programme, so that the railway workshops will be kept busy for some time to come. It may be mentioned further that the C.F.L.M. are importing 100 bogie trucks, of which 70 will be erected by the S.A.R.

Electric Shock Accidents.

The admission that much of the electrical plant in use below ground is not by any means all it might be is quite commonly made by those well qualified to offer an opinion; but that those accidents which occur are thereby explained does not, as is frequently assumed to be the case, immediately follow. Though it is probable that something remains to be done in replacing plant which is actively or potentially dangerous from the point of view of the risk of electric shock, it is certain that there is much more to be done in improving the standard of upkeep of electrical plant below ground. A glance at the table prepared by the British Inspector of Mines shows how great a proportion of the accidents might have been avoided by systematic and thorough inspection and maintenance of the various plants. So high a proportion of preventable accidents is not creditable to mine electricians. H.M. Electrical Inspector of Factories has to report nine fatal electric shock accidents in factories throughout the United Kingdom during the year 1910, as against 48 electric shock accidents in and about mines. It is hardly possible to suggest that those responsible for the upkeep of electrical plants below ground are less conscientious than those occupying similar positions on the surface; but it is doubtful whether all mine electricians are thoroughly alive to some of the dangers which commonly occur in underground working, and the figures just quoted are some confirmation of that view. Specific mention may be made of the casual and obviously inefficient way in which earth connections are so often made; the tendency to dispense with systematic inspection and testing of apparatus, or, in other words, the tendency to assume that everything is right until something is shown by an accident or breakdown to be wrong; and, finally, the very common failure to protect unarmoured cables during shot-firing operations. Each of these causes is directly or indirectly responsible every year for some accidents; and yet a mine electrician would be likely to repudiate any personal responsibility for an accident so contributed to or so caused. Nevertheless such responsibility has existed and does exist in greater or less measure in many cases, and the occasion for it is damaging to the electrical industry, as undue weight thereby attaches to the arguments of those who would prohibit the use of electricity below ground, in spite of its advantage from an economic standpoint and in spite of its advantage to the workmen in saving what would otherwise be arduous labour. However small, when expressed as a percentage of the total number of fatal accidents in mines, those due to the use of electricity may be, there still remains room for improvement.

Analytical Chemist.—SITUATION WANTED.

Some years practical experience in Government Laboratory in Cape Town. Advanced in Assaying and General Analytical Chemistry, Food and Water Analysis. Also possesses good knowledge of Microscopy.—Address: D. C., c/o "S. A. Mining Journal," Box 418, Johannesburg.



BULLIVANTS'
STEEL WIRE
MINING ROPES

WIRE ROPES
FOR
HAULING, WINDING
AND ALL MINING OPERATIONS.
BLOCKS, PULLEYS,
& ALL APPLIANCES FOR WORKING
WIRE ROPES.

BULLIVANTS' SOUTH AFRICAN Co. LTD.
F. W. DUQUEMIN, Manager.
Trust Buildings, Fox St. P.O. Box 4846 Johannesburg.
Rhodesia { Sessel & Rose P.O. Box 308 Bulawayo.
" " P.O. Box 266 Salisbury.

Commerce and Industries.

Cold Storage Trust. Although four out of the five undertakings in which it is interested showed better results in 1910-11 than in 1909-10, the Cold Storage Trust did not derive any benefit in the past year. The report for the twelve months ended 30th June last shows that the net income was practically unchanged at £14,000. The results of the five companies in which the Trust has its principal holdings were as follows:—Imperial Cold Storage, 1910-11, loss £37,200 (nine months); 1909-10, loss £5,500; Rand Cold Storage, 1910-11, profit £7,500; 1909-10, loss £7,000; Sparks and Young, 1910-11, profit £12,500; 1909-10, profit £3,300; Port Elizabeth Cold Storage, 1910-11, profit £950; 1909-10, loss £400; Pietermaritzburg Cold Storage, 1910-11, profit £600; 1909-10, loss £50.

* * * *

German Progress in Africa. Hamburg houses are making such steady progress in the African trade that the movements of German traders in what is no longer the "Dark Continent" are being closely observed by firms in Liverpool, Manchester and other English centres. The German Dar-es-Salaam Railway will, it is expected, be completed to Lake Tanganyika by the summer of 1914, the total distance being 778 miles. A section of 443 miles is already working. The German project is to tap Tanganyika three miles north of Ujiji, where Stanley found Livingstone in 1871. The great facilities for inland navigation afforded by the system of African fresh water will thus be more completely at the command of German firms, who are already securing a large portion of the ivory trade.

* * * *

Townships Registry Transfers. Transfers of leasehold property registered at the Rand Townships Office during 1911 numbered 2,301, as against 1,840 in 1910, an increase of 461. Value of stands and plots dealt with last year was £1,146,746. With respect to freehold transfers during 1911, the number of deeds was 3,212; value, £708,951. Bonds registered were as follows: On leasehold stands and plots, 1,286; value, £1,104,594. On freehold stands and plots, 1,462; value, £934,962. The corresponding figures (1910) were: Leasehold bonds, 930, an increase during 1911 of 356; freehold bonds, 980, an increase during 1911 of 482. Deeds of transfer and bonds dealt with at the offices of the Rand Townships Registrar in 1911 totalled altogether 8,261. The full valuation amounted to £3,985,253.

* * * *

Trade of Mozambique. The United States Consul at Lourenco Marques (Mr. George A. Chamberlain) reports: While all the ports in Portuguese East Africa, except Inhambane and Beira, showed a large decrease in exports during 1910, the year cannot be considered a poor one from a business point of view. If anything, trade was more active than ever, there being a general increase in imports throughout the country. The district of Lourenco Marques saw its imports rise from $3,592,178 to $4,517,390; Inhambane, the banner district of the year, besides doubling its exports, increased its imports from $457,340 in 1909 to $608,165 in 1910; Chinde increased its imports from $437,274 to $555,193; Quelimane, from $305,953 to $529,806; Mozambique district, from $757,361 to $961,726; the Mozambique Chartered Company, Beira, from $1,801,941 to $2,967,025, and the Nyassa Company from $529,200 for the whole of 1909 to $315,092 for the first six months in 1910. In most countries an increase in imports occurring simultaneously with a marked decrease in exports, is considered an unhealthy sign; but it is not necessarily so in Portuguese East Africa, owing to two unusual factors. First, the buying power of the country is not measured by the exports so much as by the number of labourers sent to, and returning from, the mines on the Rand. This number greatly increased during 1910. In the second place, the largest individual class of merchants in the Province is that formed by the many forwarding agents for mines and firms on the Rand and in Rhodesia. Considering, also, the fact that almost the entire European population of the country is dependent upon outside sources for salaries and support, it will be seen that the sum total of exports does not immediately affect general trade.

* * * *

Union Stamp Duties. Mr. Nightingale, Secretary to the High Commissioner for the Union of South Africa in London, has been informed by Mr. Watkins, President of the Chartered Institute of Secretaries, in connection with the payment of stamp duty under the Act of 1911, that the transfers of shares of companies not registered and incorporated in the Union would not be liable to the transfer duty stamp, except transfers through the bank register kept in the Union.

* * * *

Remarkable Fibre. The Director of Agriculture, Lourenco Marques, has received from Messrs. Grey, Dawes & Co., London, the following report on samples of fibre sent to them:—"No. 1.—Sample of Sisal Hemp from Malinguine, district of Quilimane.—This is the finest specimen of sisal hemp for length and strength of colour which we have ever seen, and we value it, at the present low prices of fibre, at £28 per ton. We have seen such fibre before now obtain a price of £45 per ton in a good market. We are in a position to sell any quantity of this, and shall be glad to take in hand any consignments you may have. No. 2.—Sample of Mauritius Hemp (Fourcroya) from Matenga.—In to-day's bad light we cannot be sure if the colour, cleaning and strength are in every way quite satisfactory. We value this at £27 per ton. This also is saleable in a fair quantity, as it is scarce as present. These values are both for c.i.f. London. In connection with fibre, we are interested in this article from East Africa, and if you can send us any consignments we shall be pleased to dispose of same to best advantage." The sisal hemp (says the Lourenco Marques *Guardian*) is from the Companhia do Boror's plantation at Malinguine, on the river Inhamacurra, where they have, with new cultivation, two million plants of various ages. The percentage of fibre obtained in 1910 was 3½ per cent., in 1911 3 per cent., the lower proportion being due to the unusually high rainfall of the season of 1910-1911. The soil is a light sandy loam. Another plantation of 700,000 plants has been laid out at Inhamacurra, a few kilometres higher up the river. No. 2 sample of Fourcroya gigantea is from the plantation of Mr. Bauhofer at Matenga, Inhambane, on the characteristic red sandy soil of the district.

* * * *

Shipping Statistics. During November, 1911, 99 vessels entered the port of Capetown, as against 84 in November, 1910, and 99 were cleared, as against 84. In the same month, 123 (as against 120) entered Durban, and 128 (as against 116) were cleared there, but, deducting vessels in ballast, the figures are:—Entered: Capetown, 1911, 92; 1910, 80; Durban, 1911, 85; 1910, 91. Cleared: Capetown, 1911, 88; 1910, 73; Durban, 1911, 95; 1910, 94. The figures for the eleven months are even more striking. They are (omitting vessels in ballast):—Entered: Capetown, 1911, 984; 1910, 865; Durban, 1911, 1,026; 1910, 1,078; Port Elizabeth, 1911, 504; 1910, 470; East London, 1911, 503; 1910, 453. Cleared: Capetown, 1911, 913; 1910, 788; Durban, 1911, 1,082; 1910, 1,155; Port Elizabeth, 1911, 489; 1910, 445; East London, 1911, 427; 1910, 373. Still more significant, however, are the figures of the merchandise handled at the different ports. Thus, in the eleven months ended November 30th, 1911, no less than 676,160 tons of merchandise were landed at Capetown, as against 625,790 tons in the corresponding period of last year. At Durban 705,253 tons were landed, as against 746,066 tons in the eleven months ended November 30th, 1910. The figures for Port Elizabeth are:—1911, 440,595; 1910, 399,169; and for East London, 1911, 288,609; 1910, 278,057. As regards merchandise shipped, the returns show the following figures: Capetown, 1911, 236,597 tons, as against 143,570 in 1910; Durban (excluding bunkering coal), 528,466 tons, as against 565,289 in 1910; Port Elizabeth, 125,608 tons, as against 108,035 in 1910; East London, 80,831 tons, as against 94,144 in 1910.

* * * *

Increasing Misrepresentation in Trade.

The Special Committee appointed by the London Chamber of Commerce to consider the general question of misrepresentation in trade, and what action the Chamber could take in the matter, find the allegations of a growing tendency to misrepresent the nature, origin, quality, quantity, and value of all kinds of goods to be borne out by the evidence submitted to them. Amongst the more prominent instances of misrepresentation brought before the Committee were the following:—The use of the word "port" for wines other than those shipped from Oporto; selling beet sugar crystals as Demerara sugar; selling as "Scotch tweed" inferior material not made in Scotland; "assembling" in this country foreign parts of watches, and selling the complete article as British; selling as "linen," "silk," or "woollen," hosiery, etc., not made exclusively of those materials; selling as "wool," "natural wool," "merino," and "vicuna" articles adulterated with cotton, etc.; selling, as "marble," materials other than marble; selling machine-sewn boots and shoes as "hand-sewn"; marking electric lamps with regard to the length of life and amount of light obtained; describing mould-made paper as "hand-made"; misleading advertisements; false marking of foreign hops, etc., etc.

* * * *

Cold Storage Trust.

The directors of the Cold Storage Trust report for the financial year ended June 30, 1911, that the net income for the year, including £23,716 brought forward from 1910, amounts to £37,656, and the directors recommend that the payment of the dividend on the preference shares for the year ended June 30, 1911, amounting to £10,500, be approved, and that the balance of £27,156 be carried forward. The accounts of the Imperial Cold Storage and Supply Company, Limited, for the nine months ended December 31, 1910, show a loss (after providing for depreciation, bad debts, and debenture interest) of £37,180, which amount, added to the deficit of £83,984, existing at March 31, 1910, makes a total to the debit of profit and loss account at December 31, 1910, of £121,164. In addition to this amount the directors of the Imperial Company have written off the sum of £552,983 in respect of depreciation in value of the properties, buildings, plant, machinery, and other assets, making up a total debit of £674,148. This amount has been met by a reduction of the company's capital from £875,000 to £201,000 under an order made in the Transvaal Division of the Supreme Court of South Africa, dated August 11, 1911. The accounts of the Rand Cold Storage and Supply Company, Limited, for the year ended March 31, 1911, show a profit (after providing for depreciation, bad debts, and debenture interest) of £4,472, reducing the deficit on profit and loss account, shown on the balance-sheet at March 31, 1911, to £76,286. The capital of this company has been reduced from £600,000 to £500,000. The accounts of Sparks and Young, Limited, for the year ended March 31, 1911, show a profit (after providing for depreciation, bad debts, and debenture interest) of £12,543, converting the previous loss of £12,103 at March 31, 1910, into a balance to the credit of profit and loss account at March 31, 1911, of £439. The capital of this company has been reduced from £200,000 to £64,250. The accounts of the Port Elizabeth Cold Storage Company, Limited, for the year ended June 30, 1911, show a profit (after providing for bad debts and debenture interest) of £950. The balance to the credit of profit and loss account shown on the balance-sheet at June 30, 1911, amounted to £1,693. It is proposed to reduce the capital of this company from £75,000 to £21,400. The accounts of the Pietermaritzburg Cold Storage Company, Limited, for the year ended March 31, 1911, show a profit (after providing for bad debts and debenture interest) of £612, reducing the debit on the profit and loss account at March 31, 1911, to £665. The capital of this company has been reduced from £40,000 to £12,800. Senator the Hon. J. A. C. Graaff and the Hon. Sir James Sivewright, K.C.M.G., directors of the company, retire at the forthcoming general meeting, and, being eligible, offer themselves for re-election.

* * * *

Beira Railway.

The directors of the Beira Railway Company, in submitting their report on the business of the company to the present date, together with accounts covering a period of two years from October 1, 1908, to September 30, 1910, state that the analysis of traffic for the two years under notice shows the gross and net earnings of the Beira-Salisbury section to be as follow:—1908-9, gross revenue, £314,222; expenditure, £129,322; net revenue to Beira and Mashonaland Railways, £184,899; percentage of expenditure to receipts, 41.1. 1909-10, gross revenue, £436,295; expenditure, £142,807; net revenue to Beira and Mashonaland Railways, £293,488; percentage of expenditure to receipts, 32.7. The general goods traffic continues to show a steady increase, viz., 47,826 tons, yielding £220,416 in 1908-9, and 68,750 tons, yielding £312,240, in 1909-10. Construction material for the northern extension was carried during this period, and amounted in 1908-9 to 28,617 tons, yielding £43,599, and in 1909-10 to 37,500 tons, yielding £58,985. Mineral traffic shows an increase of 1,547 tons in 1908-9 over that for 1907-8, and of 14,525 tons in 1909-10 over that for 1908-9.

* * * *

Sir J. L. Hulett and Sons, Ltd.

This Company was originally formed in 1892 with a capital of £50,000 to take over a business of tea planters and manufacturers founded in 1880. The company turned its attention to sugar in 1902, and has since extended its operations very considerably. It now owns 28,000 acres of freehold land in Natal, together with two tea factories turning out over 1,000,000 lbs. of tea per annum, three sugar factories and a refinery, while a fourth sugar factory is nearly completed. To provide for the growth of the business the capital has been increased from time to time until it has reached £500,000 in £1 shares, of which 50,000 are held in reserve, in addition to which there is also £299,400 in debentures outstanding. Sir J. L. Hulett values the freehold property at £120,000, the factories and refinery at £480,000, and the growing crops at £85,000. Profits in four years ended June 30, 1911, after payment of debenture interest, have risen from £19,652 to £58,213, and the dividends have gone up from 8 per cent. to 12, while for the current year the profits are estimated at not less than £75,000.

Advertiser, who has been Sub-Manager for several years of a large Corporation in South Africa, requires a position of trust; experienced bookkeeper; salary no object; would accept any position to commence with.—Apply, "S. L.," c/o *S.A. Mining Journal*, Box 963, Johannesburg.

The S.A. Coal Trade.

Shipping at Cape Town is now being supplied with Natal coal at 22s. 6d. per ton, a large reduction on former years, which is, of course, partly explained by the very heavy general fall in the price of coal throughout South Africa. Thus, in the case of Transvaal coal, which is not suitable for shipping purposes, the selling price at the pit-tops has fallen from 8s. 3d. to 4s. per ton within the past nine years. This result, as the *Economist* explains in some interesting notes on the South African coal trade, has been effected by marked reductions in the cost of administration. The output to-day is nearly four times what it was nine years ago, and is only meeting requirements with some difficulty. In the case of Natal coal, which is used almost exclusively at the Cape Town docks for the supply of shipping, the price at the collieries has fallen from £1 per ton to something like 5s. The net result has been to reduce the price of bunker coal by from 30 to 40 per cent., and to secure the use of a South African product where in former years the shipping relied to a very large extent on the imported article. It is hardly necessary to emphasise the importance of such a trade, not only to Cape Town but to the whole of the Union. The Natal collieries are assured of a certain and a steadily-increasing demand, and employment on a considerable scale is found in the ports where a bunkering trade exists. There is good reason to suppose that as a result of sundry experiments in mechanical devices and in administrative system which are now being made, the price per ton at Cape Town will be capable of still further reduction.

The discovery of an eight-carat diamond is reported from Goedgenog, in the Klerksdorp district. A nugget of gold of about 1 dwt. has also been found in the district.

Pretoria Portland Cement Company, Ltd.,

Contractors to the Union Government, South African Railways, Pretoria and Johannesburg Municipalities.

It has been decided to make a

FURTHER SUBSTANTIAL REDUCTION IN THE PRICE OF

Pretoria Portland Cement

as from 1st January, 1912.

Pretoria Cement is the best in the Market and it can be procured at about half the price of the imported article.

Quality Guaranteed.

For particulars apply to:

Secretary, Pretoria Portland Cement Co., Ltd.,
P.O. Box 405, Pretoria,
or the Johannesburg Agents:
Messrs. Baerecke & Kleudgen,
307-314 Consolidated Building,
P.O. Box 1164. Johannesburg.

Contracts Open

The Municipal Council of Johannesburg invites tenders for the supply of bricks (Jan. 24); also for the supply of water piping and fittings and 5in. black piping (Jan. 23).

The Middelburg Municipality invites tenders for the supply of eight street lamps of 500 candle-power each; lamps to be storm-proof and to burn paraffin or methylated spirits; also for the supply of eight iron lamp-posts (Jan. 25).

The Secretary, Pretoria Hospital Committee, invites tenders for the supply of all necessaries, including groceries, mineral waters, meats, milk, eggs, coal, wines and spirits, drugs and dressings, washing, crockery, hardware, linen, uniforms, etc.; also piano-tuning and winding and repairs to clocks, for the period 1st April, 1912, to 31st March, 1913 (Jan. 26).

The Secretary, Buildings Committee, Dutch Reformed Church, Ventersdorp, invites tenders for a large new church building at Ventersdorp (Jan. 20).

Mr. W. H. Ford, architect, c/o New Dutch Reformed Church, Frankford, O.F.S., invites tenders for alterations and additions to church (stone) (Feb. 10); also for a new church (brick, cemented) at Ventersburg, O.F.S. (Feb. 10).

The Secretary to the Tender Board, South African Railways, Headquarter Offices, Johannesburg, invites tenders for the supply of 8,480 muids of white mealie-meal required for Natal and Orange Free State Provinces (Jan. 16); also for the supply of 519,500 hardwood sleepers or (alternatively) creosoted Baltic sleepers (March 5); also for the supply of palisade fencing (Feb. 27); also for the erection of the iron superstructure of Oorlog Spruit railway bridge at 320¾ M.P. near Norvals Pont, consisting of three spans of 100 feet and two spans of 20 feet, and the dismantling of the iron superstructure of the present bridge (Jan. 23).

Contracts Placed.

The following tenders have been accepted by the Union Public Works Department for the various services mentioned, viz.:— Jas. Littlejohns, 1, Steyning Street, Woodstock, Cape, £3,057 6s. 3d.; masonry and earthwork, Olifants River Bridge, Clanwilliam, Cape Province. P. W. S. Birnie, Box 367, Krugersdorp, £1,580; erection of school and teachers' quarters, Koesterfontein No. 108, Witwaterberg. John Campbell, contractor, Kuruman, Cape Province, £2,372 8s. 9d.; erection of a gaol at Kuruman, Cape Province. H. Brown, Box 3, Lower Umkomaas, £3,328; erection of school at Bellair, Durban. J. Brand, Vants Drift, via Dundee, £1,226 12s. 7d.; superstructure, Blood River Bridge, Natal. W. F. and C. F. du Plessis, Marquard, Orange Free State, £3,900; erection of school at Rouxville, Orange Free State. C. A. McDonald, Ltd., Box 668, Durban, £1,022 15s.; supply and erection of steam and refrigerating plant for School of Agriculture, Middelburg, Cape Province.

Zaaiplaats Tin Mining Company, Limited.

A further interim Dividend of 50 per cent. has been declared by Directors, and will be paid as soon as possible after the 1st day of March, 1912, to all Shareholders registered in the Books of the Company on the 31st January, 1912.

The Share Transfer Register will be closed from the 1st February, 1912, to the 6th February, 1912, both days inclusive.

AFRICAN BOARD OF EXECUTORS & TRUST, CO., LTD.,
Secretaries.
Per J. H. C. VERSFELD.

Johannesburg Motor Garages and Suppliers of Motor Cars, Accessories, etc.

JUST ARRIVED—1912 MODELS

PHŒNIX AND VULCAN CARS

Trial Runs Arranged. Full Particulars from

REED'S GARAGE
GOVERNMENT SQUARE, JOHANNESBURG.
Phone 1434. P.O. Box 2720.

If its COMFORT and RELIABILITY you want,
—RIDE A—

BAT MOTOR CYCLE

3½ H.P.	*6 H.P.*
£65.	£78 10s.

8 H.P. £82

AGENTS FOR:
Indian-Scott, Bat, New Hudson, Moto-Reve, Hazel Motors.

Send for FREE List
WILLIAMS, HUNT & CO.,
129, Commissioner Street, & Von Brandis Square.
Box 2437. 'Phone 3039.

If you do your Own Repairs —
Send your difficult Machine Work to

PILLANS Bros. & OWEN
Mechanical & Electrical Engineers,
SAUER STREET, MARSHALL SQUARE,
JOHANNESBURG.

Cylinders and Crank Shafts Accurately Ground, and Bearings Remetaled.

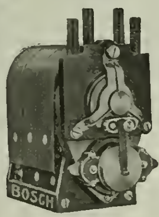
Accumulators Charged, Magnetos Fitted and Repaired. Tyres and Tubes Vulcanized.

The Goodrich Tyre for Mileage.

IMPORTERS:
Johannesburg Vulcanizing Works,
Tyre and Wheel Specialists,
Re-treaders and Repairers, Manufacturers of Rubber Goods.
P.O. Box 3912. Telephone 2304. Tel. Add.: "RETREAD."
Cr. Loveday & Marshall Streets, Johannesburg.

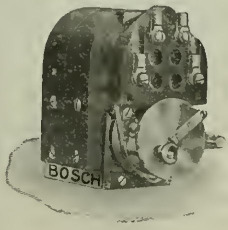
BOSCH MAGNETOS.

TRADE MARK.



Type D. R. 4.

A large assortment of the latest types of **magnetos** and **spares** of **all kinds, dual ignition coils** (vertical and horizontal), **sparking plugs,** and **White & Poppe carburettors** kept in stock,



Type D. F. 4.

Sole Representative for South Africa:
F. HOPPERT
CORNER OF
Main & Simmonds Streets,
JOHANNESBURG.
Teleg. Address: "MAGNETOS."
P.O. Box 3503.
Phone 3130.

Dunlop Repair Shop

SEND YOUR TYRES FOR REPAIR OR RETREADING
TO THE
MANUFACTURERS.

DUNLOP GROOVED TREADS (manufactured in our English Factory) Fitted to any make of cover.

Burst Covers and Tubes properly repaired.

Call and inspect samples of our work.

Dunlop Repair Works,
83, BREE ST.,
P.O. Box 6370. JOHANNESBURG.
'Phone 831.

Automobile Notes.

A Recent Explosion.

The recent explosion at a local garage, whereby several natives were seriously injured, once more serves to emphasise the dangers which attach, in the ordinary daily routine, at these places, even when carried out with due respect to the degree of caution demanded in such undertakings. In this particular instance, it has not exactly transpired how the explosion was caused, beyond the surmise that some petrol fumes came in contact with a naked light, and in the absence of the results of an enquiry this supposition is generally accepted. The moral, however, in relating the episode points to some apparent laxity in garage regulations, or supervision thereof, which permits of the possibility of exposed petrol, or other inflammable commodities embracing risks. Apropos of this, it may be interesting to refer briefly to the new garage regulations, of a most stringent nature, which have recently been introduced by the New York City authorities, governing the storage of cars and petrol. All garages primarily must be approved of by the Fire Commissioner, whilst the site for a garage is not permitted within certain prescribed limits of schools, theatres, and places of amusement. No wooden buildings are allowable for use as a garage, which is significant, by the way, in view of the many wood and iron structures serving this purpose in the Johannesburg "petrol area." Further, qualification for a garage to store petrol enforces the provision of a steel tank embedded a sufficient depth to render same fireproof. It may be remarked that the tank system is being adopted here on the mines and railways, and some of the more modern garages have these tanks on order, or being installed; the petrol by this provision being brought directly by hose to the tank of the car. Many other regulations refer to the use of extinguishers of various kinds, transport of petrol, etc., all of which, however, conduce materially to increase the cost of motoring, a pursuit in these parts sufficiently saddled with expense.

1912 Models.

It will be noticed from the advertisement columns that the 1912 models of two famous British cars have arrived, viz.: the Vulcan and Phœnix, and can been at the showrooms of the local importers. These serviceable cars have established a reputation in many countries for efficiency and the utmost reliability. The first-named are made in four models, 10·12, 15·9, 19·6, and 29·4, all, with the exception of the latter, being four-cylindered, and are considered a second to none mechanical proposition. The Phœnix efficiency is proverbial, and needs no enlarging upon. They are made in two popular models, an 8·10 two-seater and a 12·15 five-seater. The transmission singularises this very useful car, being the Hans-Renold silent chain, central and enclosed, a lead, established with a great measure of success, by the Phœnix Company, and which is being followed by other manufacturers to a large extent to-day. This car the makers claim to do its work day in and day out in all weathers, at a maintenance charge which cannot be equalled by any other machine.

A Menace to Motor Cyclists.

The weakness exhibited by many dogs in charging the motor cyclist should be more seriously recognised by the owners of these canine nuisances. Some little time ago, it will be remembered, the owner of a dog was called upon, in one of the local courts, to pay heavy damages, claimed by a motor cyclist for injuries sustained through the defendant's dog fouling his machine. The practice, needless to remark, involves a danger which no dog owner can afford to disregard, as the consequences to a cyclist may easily be those of a fatal nature. Among the number of dogs inclined in this dangerous manner there may possibly be very few which indulge in the habit, on the score of ferocity, and would try conclusions with a cyclist's leg to the extent of removing a piece of same. Such animals can be destroyed, of course, on the recommendation of a magistrate, but the creatures to be dreaded perhaps most are the class, earlier referred to, that find special delight in charging at all and sundry motor bicycles. There is no need to further enlarge on the danger; how to prevent it seems to lie with the cyclist himself, who, for instance, can report habitual happenings of this nature to the authorities, and they in turn be requested to prove the truth of the allegations, and in the event of their investigations being satisfactory, order the chaining up, or destruction, if need be, of the offending dog.

CONTINENTAL

THE WORLD'S LEADING TYRES.

FOR MOTOR CARS:

The Extra Heavy Square Tread Tyre;
The Tropical Renforcé Three Ribbed Tyre;
The Black Red Steel Studded, as used exclusively during the "Prince Henry Trophy" Race.

FOR MOTOR CYCLES:

The Extra Heavy Tyre, Ribbed Pattern;
The Rubber Studded, Non Slipping Tyre.

N.B.—All our Tyres are specially manufactured by our Home Company to suit the South African Climate and Roads, and stand UNSURPASSED in Quality.

STOCKS OBTAINABLE THROUGHOUT SOUTH AFRICA.

ALL MOTORISTS

SHOULD USE

TEXACO

RED STAR

PETROL

THE PETROL THAT WINS.

Lowest Petrol Consumption in the Reliability Trial to Vereeniging and back for the Excelsior Trophy.

Single Cylinder Class, by Mr. H. Rieder on a 3½ h.p. Alldays Matchless. **167 miles to the gallon.**

Lightweight Class, by Mr. F. Whittaker on a 2½ h.p. H. & R. Lightweight. **212 miles to the gallon.**

THE TEXAS COMPANY (S.A.) LTD.

The T.A.C. Racing Season.

The annual distribution of prizes in connection with the T.A.C. racing season, just closed, will take place on February 24th, at Eastington, Yeoville, the residence of His Worship the Mayor, who is also the President of the Club. The presentation will combine a social function, at which a large attendance is expected to do honour to the various prize recipients.

" Yellow Label " Spirit.

For some unaccountable reason the local petrol market for a considerable time has been deprived of the spirit familiarly known as " Yellow Label." It is gratifying, however, to report that this brand has once again made its appearance, and can be obtained, without fear of a recurrence of an awkward dearth, from any of the motor traders and garages in town, at the usual figure. Quite a number of brands of motor spirit is now obtainable, at as many different prices as there are varieties, any criticism of which, however, leads to unpleasant trade friction, thereby rendering discussion a delicate subject, but at the same time, as previously stated in these columns, the owner of a car is always in the best position to differentiate in regard to the brand of spirit, light or heavy, as the case may be, best suited to his particular car. For the time being, at all events, these columns prefer to remain neutral—though not necessarily disinterested—in respect to the agitation which has arisen over that most indispensable commodity, petrol spirit.

S.A. Society of Motor Traders.

The South African Society of Motor Traders welcome at all times any recommendation whereby the welfare of their members may be furthered and their interests protected, and the efforts of this excellent organisation in the past to this end, have been fully recognised from the point of success. In view of this fact, therefore, a suggestion might, with advantage, be submitted to the Society which, if acted upon, would probably benefit the entire motor trade. Briefly, it is this, that a list be compiled periodically, for the exclusive use of motor traders, of clients who may be bluntly classified under the heading of " bad pays." Each trader, it is obvious, could render valuable assistance to such a scheme, contributing from actual experience. It is by no means unheard of for a motorist, who in the ordinary way would scorn the term impecunious, to unceremoniously sever his connection with a motor trader, leaving an unpleasant impression, and transfer his " patronage " to another who is entirely unsophisticated. The motor industry clientle are by no means an exception, when one discusses questionable dealings, but to the credit of the Johannesburg motorists, it must be plainly understood, that their integrity is beyond question in the majority of cases. The subject, however, deals with the other side, the man who boasts he can " run " his car on most economical lines (sic), were the fact disguised that such " economy " is at the expense of the motor trader. The position is by no means too strongly referred to, or exaggerated, and the S.A.S.M.T. will not for a moment be accused of overzeal if they tackle, with their customary keenness, this very vexed question.

Wood and Wire Wheels.

Some highly interesting comparative tests imposed upon wood and wire wheels were arranged by Messrs. Rudge-Whitworth, Ltd., for the edification of the visiting members of the Society of Automobile Engineers of America, who, in respect to the wood wheels, were of opinion that the material used in its construction was far below their standard of excellence. This opinion, however, may be prompted by the natural national bias, known to exist between the rival engineers of the two countries. In respect to the wire wheel it was, however, admitted that it stood the severe lateral strain subjected to, satisfactorily; but its drawbacks were also pointed out " the difficulties of cleaning, liability to rust and become shabby," etc., which, after all, cannot be considered objectionable, at least in this country—if a departure from the field of test, under review, be permitted —where favourable conditions of climate do not militate against wheels in that respect, and in consequence they do not require attention in the same degree as damper climates demand. The opinion as regards lateral strain is gratifying, and favours the wire wheel in this country, where the roads constantly subject cars to the most severe strains imaginable.

New Patents.

652. Thomas Pearson Smith and Robert Reid.—Clutch and brake locking mechanism for winding engines and the like.
653. Archibald McMullan and Frederick Charles Prickett.—Improvements in gates.
654. John Alston Hart.—Apparatus for producing inter-action between liquids and gases or vapours.
655. Nochem Freed and Pieter August Smorenburg.—Candle holder.
656. John Edwin Jones.—Spring fork for motor bicycles.
657. Kaffranan Steam Mill Co. and David Allison.—A new game.
658. James Hart Robertson.—Art of extracting metals electrolytically.
659. James Esson and Denis Francis Breslin.—Improved means of replacing electrical fuses by an automatic method.
660. Martin Wagner.—An improved apparatus for ejecting and spraying liquid solutions and the like.
661. Jean Bally.—Improvements in electric furnaces.
662. Paul Theuerkorn and Mann and Willkomm.—Improved method of covering and lining tubes and the like with lead, tin, or the like, and apparatus therefor.
663. Nathaniel Greening.—Improvements in wire fabrics for screens and sieves.
664. John Mitchell Lafayette Henry.—Improvements in supporting pneumatic hammer drills.
665. John Mitchell Lafayette Henry.—Improvements in stope drilling.
666. Jan Van Nes.—Improvements in the production of photographs.
667. Alfred Henry McNeil.—Improvements in automatic fire alarm systems.
668. Josef Carl Steinebach.—Device for automatically stopping electric hoists.
669. Franz Bade.—An improved process for setting bort in diamond drills.
670. James Edward Thomas.—A new or improved collapsible case, envelope, or covering for holding travellers' rugs and for other like purposes.
671. James Kyle.—Improvements in apparatus for breaking ground.
672. John Lysaght, Ltd., and Henry William Foan.—Improvements in wire netting machines.
673. Alexander John Arbuckle.—Improvements in means for de-watering ore pulp, also applicable for separating other solids from liquids.
674. Samuel McChesney.—Improvements in locking devices.
675. Wilbur Alson Hendryx.—Improvements in dewatering devices or means for separating solids and liquids.
676. Henry William Joy and The Natural Colour Kinematograph Company, Ltd.—Improvements in Kinematograph apparatus for the production of coloured pictures.
677. Hans Edgar.—Improvements in Rock drills.
678. Leslie Salter.—Improved portable chain stitch sewing machine.
679. Hupp Motor Car Co., and Emil Andrew Nelson.—Improvements in vehicle springs.
680. Albert Alonzo Pauly.—Improvements in moulding apparatus.
681. Noward Oviatt.—Improvements in connection with furnaces for the direct production of iron and steel from iron ores.
682. Ernest Wright—Improvements in machines for decorticating the fibrous leaves and stems of plants.

1912.

1. William John Galbraith.—Improvements in locking mechanism for brake and clutch levers of winding engines and the like.
2. William Henry Milton.—Water drip cooler.
3. Francis John Slade Baker.—Bracket spindies for use in telegraph, telephone, or other wire supports.
4. John Felton.—Improvements in the bits of shot drills and the like.

Draughtsman, used to Mine and Surface work, plotting and planning, as well as quantity surveying, requires appointment; excellent local credentials.—Apply, " J. E.," c/o *S.A. Mining Journal*, Box 963, Johannesburg.

BLANE & CO., LTD.,

CENTRAL HOUSE,

Telephone 3878. **JOHANNESBURG,** P.O. Box 435.

Have taken over the following Agencies:

DRYSDALE & CO., LTD., GLASGOW,

Centrifugal Pumps, etc.

UNITED STATES METALLIC PACKING CO., LTD., BRADFORD,

Metallic Packing, Steam Traps, etc.

THE NICHOLAS WALKER RAWHIDE MANUFACTURING CO., SHIPLEY,

Chrome and Rawhide Leather Belts and Belt Laces.

ENQUIRIES INVITED.

ROPE DRIVING

For Efficiency and Durability,

SPECIFY

Awarded Diploma of Honour at Brussels.
Gold Medal, Franco-British Exhibition.

Illustrated Lecture on
"THE TRANSMISSION OF POWER BY ROPES"
Post Free on application.

WM. KENYON & SONS, LTD., Dukinfield, England.

BLANE & Co., Ltd.,

Sole Agents for South Africa.

Large Stocks Kept for Immediate Delivery.

THE SOUTH AFRICAN
Mining Journal,
WITH WHICH IS INCORPORATED
The South African Mines, Commerce and Industries.
ESTABLISHED 1891.

VOL. IX., PART II.] JANUARY 20, 1912. [No. 463.

HEAD OFFICE: 119-126 Exploration Building (3rd Floor).
Telephone **913.** P.O. Boxes **963** and **418.**
Cable and Telegraphic Address: "**MINING JOURNAL.**"

MANAGER FOR GREAT BRITAIN: G. Leighton Hare, 119-120 London Wall, London, E.C., to whom all communications must be addressed.

GERMAN AGENTS: Dean-Mayer Co., Linkstrasse 39, Berlin, W., 9; Rudolf Mosse, Jerusalemer Strasse, 46-49 Berlin, S.W. 19; H. C. Wolff, Residenzplatz, M. 85. Kempten, Bavaria.

AMERICAN AGENTS: Gotham Advertising Company, 95 Liberty Street, New York.

Copies of this journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Office as above.

NOTICE.—The postage of this issue of the *S.A. Mining Journal* is: South Africa, 1d. All other parts, 2d.

CONTENTS.

PAGE
Notes and News 703
Topics of the Week:
The E.R.P.M. Compromise 705
The New Spirit in Rand Mining 706
Phthisis Developments 706
The Position at Benoni 707
Dividend Payers in December 708
Transvaal Chamber of Mines 708
The Geology of the Witwatersrand 709
Mining in Manicaland 711
Mooifontein Diamonds 712
Current and Power Factor in Induction Motors 713
The Combustion of Coal 714
Rhodesian Section:
Latest Charterland Mining News 715
The Year in Rhodesia 716
Tanganyika Concessions Ore Reserves 717
Correspondence and Discussion: "London Diamonds," "Anti-Malarial Remedy," "The Geology of the Witwatersrand," "Rand Company Meetings" 719
A Holiday Place for Jaded Randites 721
Mining Men and Matters 723
The Week in the Sharemarket 725
Engineering Notes and News 727
Commerce and Industries 729
Automobile Notes 733
Index to Advertisers.

Notes and News.

Metallurgy of the Black Reef. Certain improvements have recently been effected in the treatment plant of the Orion mine on the Black Reef, which will result in that property securing much better returns. The reorganisation of the metallurgical scheme has been carried out in accordance with the recommendations of Mr. Wm. Bettel, and it is satisfactory to learn that a much better extraction is being obtained. The presence of copper in the Orion ore has hitherto militated largely against effective and economic treatment. We hope to publish at an early date a full description of the new treatment scheme.

* * * *

Ingersoll-Rand Co. The Ingersoll-Rand Co. has been awarded the only *Grand Prix* for its exhibit at the Turin Exhibition. The exhibit comprised air compressors, rock drills, hammer drills and sundry pneumatic machinery for mining, quarrying and metal-working purposes. The award adds another to the *grands prix* which the company has secured at other exhibitions, notably at Paris (1900), St. Louis (1904), and Brussels (1910).

* * * *

Le Champ d'Or. The last balance sheet of this company was presented to the shareholders in Paris a few days ago. For a small company the Champ d'Or has done well; in fact, better relatively than many concerns with so much professional management. During the year ended August 31 the battery was run on low-grade ore, stuff which previously had been neglected as worthless. At the end of the life of a mine certain economies in working are possible, and it is largely due to such and to the cheap treatment of accumulated slimes that the results obtained were so satisfactory. The net profit for the year amounted to £15,375. We understand that the company has accepted the cash offer made by a well-known Rand metallurgist for the plant and property.

* * * *

Zambesia Mining Development. The territory of the Mozambique Company has come prominently forward of late, and now another portion of Portuguese East Africa seems about to receive attention. A company bearing the title of the Zambesia Mining Development has been registered, to acquire concessions, etc., from the Companhia da Zambesia, of Lisbon. Whatever success the undertaking may meet with, the names of the directors certainly inspire confidence. The Marquis de Frondeville is a director of the Banque de l'Union Parisienne, Paris; M. F. Robellaz is chairman of the Association Minière, Paris; H. Bousquet is a director of the Association Minière; E. John is a member of the firm of Henry Burnay and Co., bankers, Lisbon; Balthazar Cabral is Vice-Governor of the Banco-Ultramarino, Lisbon; and C. Pakeman suggests S. Neumann and Co. The company was registered on December 21, with a capital of £252,000 in 240,000 ordinary shares of 1s. each, to acquire any mining concessions, licenses, or decrees from the Companhia da Zambesia, of Lisbon, and, in particular, the concessions, decrees and rights which are the subject of a contract dated November 8, 1911, between the Companhia da Zambesia and Messrs. Henry Burnay and Co. and Balthazar Cabral, to acquire any gold, copper, silver, lead, iron, coal, graphite, diamond, petroleum, phosphate and other deposits in Portuguese East Africa.

* * * *

The Diamond Market. An Antwerp correspondent of the *Berliner Tageblatt* states that the course of business in cut stones in November was quiet, and at times slow. The cause is to be found, in addition to the continual apprehensions of war, in the advanced period of the year, as the close of the year is generally unfavourable for transactions in the diamond trade.

Moreover, the various suspensions of payment in the diamond trade in November have disturbed business. In particular the Antwerp market has been injured by the failures, and German diamonds have also suffered because some of the firms who have become insolvent were regular buyers of German diamonds. Nevertheless, out of the 75,000 carats composing the November shipment of German diamonds, about 60,000 carats were sold at good prices, and the firmness of prices proves that the business world only regards the stagnation as of a temporary character. The London raw diamond market, the correspondent remarks, experienced none of the quietness observed in Antwerp and Amsterdam during the month. Business there was extremely brisk, although the De Beers Syndicate and the Premier Mine considerably increased their November shipments. Indications of a great development are shown in the case of the Premier Mine, which has so long suffered from unfavourable labour conditions, and this company in particular appeared on the market with a specially large and fine shipment in November.

* * * *

Tati Concessions.

Discussing the mineral resources of the company at the last meeting of the Tati Concessions, the Chairman remarked: "I will not say that you have great riches there, but I will say that there are indications that you have one of the most highly mineralised stretches of territory in South Africa, and in a report made in 1906 it was stated that there were very large deposits of alluvial gold on certain of the rivers passing through the territory. With regard to base metals, I find there are large copper deposits. I have been told that these deposits are sufficient to repay the capital of the company, and I only hope that it is so. At all events, there are known copper deposits on your properties, and also huge deposits of the best iron ore, which can be easily worked by quarrying, whilst, in addition, there are deposits of antimony, zinc, lead, scheelite and other minerals. It will be the policy of the directors to encourage prospectors, and already something like 130 claims have recently been pegged out, so that in this matter also the directors have been active. I may tell you that overtures have been made to the company for the prospecting rights over the whole of their territory, and this matter is receiving the careful consideration of the directors."

* * * *

The Rhodesia Annual.

We have received a copy of the Rhodesia Annual, which includes an illustrated descriptive supplement of Rhodesia's seaside resort, Beira. The Annual reflects very considerable credit on all connected with its publication. It is well got up and well printed. A large number of excellent photographs illustrate the issue, and there are readable articles on Mining, the Railways, Selukwe, Bulawayo, Umtali, the British South Africa Police, Rhodesian Commerce, etc. There are also interesting reminiscences of Charterland in the early days, including an article entitled "The Road to Mashonaland Twenty Years Ago," by H. Marshall Hole. A special word of praise is due to the excellence of the printing.

* * * *

Randfontein Extensions.

Although Randfontein Extensions, Ltd., is a land company rather than a mining company, a certain amount of prospecting work has nevertheless been done, chiefly on the company's property on the Vaal River, with a view to the ultimate sale of some two or three properties when market conditions improve. In the existing state of the South African market it is impossible to bring negotiations to a successful issue, but certain negotiations are merely waiting matters to improve. The development work done shows that the properties are of far greater value than was imagined even a year ago, and the engineer in his report states that the work done on properties adjoining has also been of a satisfactory nature.

Penhalonga and Rezende.

There have, it seems, been many futile meetings of directors in the Penhalonga and Rezende Mines, Ltd., held in London recently, with a view to effecting a working agreement between these two companies. One such agreement was mooted, but it received such strenuous opposition on the part of shareholders and directors in the Penhalonga Company that it was not carried through. At a meeting held in London last month, it was suggested that a more satisfactory arrangement might perhaps be arrived at, and it appears that the matter is for the time being allowed to stand at that. In the Rezende the main stope above the 770ft. level has been affected by dyke disturbances. This is unfortunate, as the stope in question was the best producer in the mine. It will take some weeks to get back to normal conditions, and the returns may be affected for two or three months in consequence.

* * * *

E.R.P.M. Resolutions.

The cabled report of the meeting of E.R.P.M. shareholders in London, states that three recommendations, moved by shareholders, were adopted. We are not informed as to the nature and number of the recommendations which were proposed and not accepted, except one by Mr. Edmund Davis regarding annual meetings in London. The futility and extravagance of that scheme were sufficiently demonstrated by Sir George Farrar and Mr. Schumacher. The recommendations accepted were: (1) That the gold reserve be abolished and that the monthly declarations be made to conform with the actual results for the periods for which they were issued. We cannot conceive any sound reason for the announcement of gold reserves, and the simultaneous declaration of a recovery which bears a necessary relationship to the actual returns. Neither does it seem necessary to accumulate assets in the shape of gold reserves which might equally well be recorded as cash profits. (2) That nine directors be reduced to seven. For practical purposes this number should be quite adequate. The idea of a large board was evidently to give as much representation as possible to various groups; but it is a matter for discussion whether an unwieldy board is not a disadvantage which would far outweigh the advantages of elaborate representation. (3) That the London Committee be abolished, and arrangements made for transfer work to be carried out by an outside firm. The grounds for this proposal are not apparent, but there seems to be no objection to it, provided it is the wish of the majority of the shareholders.

* * * *

The Native Labour Position.

The native labour position remains full of interest. The number of natives employed by members of the W.N.L.A. at the end of December was 174,123, or 195,249 inclusive of contractors' natives, as compared with 175,285, or 194,850 inclusive of contractors' natives, employed at the end of November. The wastage was 18,230 in December, as compared with 19,956 in November. According to the President of the Chamber of Mines, employers have been suffering lately from an abnormally high wastage—that is to say, boys returning to their homes whose contracts have expired, and the wastage for December was actually 2,640 more than for the same period of 1910. At the end of December, 1910 the requirements of the gold mines were put down at 250,467, and the number of natives employed, including contractors' natives, was 178,602, or 71·3 per cent. of the requirements. At the end of the year just passed the requirements amounted to 272,066, and the number of natives employed (including contractors' boys) to 178,282, a lower figure than at the end of 1910, being only 65·5 per cent. of the requirements. Instead of having an increase, as at the end of last year, for the month of December, of 2,500 natives, the industry has had a loss of 1,162. Analysing the position at the meeting on Thursday, Mr. Webber put it down to three causes, the falling off in the number of tropical natives coming forward, the fact that the usual flow of labour from the Transkei has not yet commenced, owing to the excellent crops of wheat which have been reaped; and lastly, to the fact that the number of natives taking their discharge has been very heavy. Owing to the serious drought, it may be that natives will be forced to come out to work, owing to the lack of foodstuffs and of material constituting the ingredients of strong drink. So far, for the month of January the number of natives passing through the Government Bureau during the first seventeen days of the month was 3,747 in excess of those coming to work during the first seventeen days of December. The exodus of natives seeking work has now begun, and there is every chance, under present conditions, of increasing the labour complement very considerably during the next few months. The number of boys who voluntarily seek work in the Transvaal from other parts of South Africa is steadily increasing, and Mr. Webber said on Thursday, "Everything will be done to enable natives from all over British South Africa to come and offer themselves for work in the Transvaal at the various attesting stations, in order that the cost of what is known as 'recruiting' may, if possible, speedily become a thing of the past." The outlook, therefore, may be described as satisfactory.

* * * *

Meetings in London.

The proposal that Rand companies should hold meetings in London has not found much favour. Messrs. Lewis and Marks have declared their adhesion to the change, and the Welgedacht Board are likewise inclined. The Central and the General Mining people have decided that the reports and balance sheets of their companies shall be issued in future in London, Berlin, Paris, and Johannesburg, simultaneously with the notices calling the meetings at Johannesburg. This means that the shareholders will not be asked to give proxies before they have had the particulars. There are, doubtless, certain difficulties, and it involves holding meetings at Johannesburg later in the year. At the E.R.P.M. meeting in London reference was made to the matter by Mr. Schumacher. He said that his firm intended to recommend the directors in Johannesburg to postpone annual meetings to enable the European shareholders to receive and study the reports before sending proxies to Johannesburg. He asserted that it was reasonable that the European shareholders should first have full knowledge and not have to send proxies in the dark. His firm did not favour the holding of annual meetings in London of South African Companies owing to the necessity of bringing over important officials whose presence probably would be required in South Africa. We trust that this decision will be found acceptable, and that the last has been heard of the not wholly disinterested Press agitation to hold meetings in London. In this connection attention is drawn to an important letter in our correspondence columns.

* * * *

Consolidated Langlaagte.

Ore of a slightly higher grade was milled during the quarter ended December 31 at the Consolidated Langlaagte, and there was a further small improvement in the gross profit. There was a considerable addition to the quantity of accumulated slime treated, but the gold from the additional tonnage was not available at the end of December, and should be reflected in the returns for next quarter. The development footage at the Deep Level Section amounted to 10,180 feet, of which 5,310 feet consisted of driving in reef. At the 31st December, the ore reserves at this section stood at 1,384,504 tons, which have been classified as follows:—Payable, 930,512 tons of an average assay value of 8·77 dwts.; unpayable, 453,992 tons, of an average assay value of 2·43 dwts. The East shaft was sunk 266 feet to a total depth of 1,947 feet, and has reached a depth of 252 feet below the 6th level station. The West shaft was sunk 268 feet to a total depth of 2,179 feet, and has reached a depth of 246 feet below the 7th level station. The foundations for the new reduction plant are well advanced, and the work of erection will be put in hand at an early date.

TOPICS OF THE WEEK.

THE E.R.P.M. COMPROMISE.

FROM the cabled account of the E.R.P.M. meeting in London on Thursday, we gather that a compromise has been effected regarding the control of the company. If our reading of the proceedings be correct, this is a consummation which is to be welcomed in the best interests of the Rand and of all concerned. Although the Central Mining people plainly hold the majority of votes, they have agreed to Sir George Farrar remaining as Chairman of the Company. The rest of the Board has been carefully chosen to represent the various interests, and Mr. Ross Skinner is to remain as superintending engineer and technical director, and in Mr. Schumacher's significant words, "the sole medium between the Board and the officials on the mine, and no orders must be conveyed except through him." Mr. W. T. Anderson is to remain as General Manager. The new Board apparently is to consist of Messrs. G. Imroth, Wallers, Raleigh, Friedlander, Ross Skinner, Robellaz, and a nominee of Messrs. Neumann, in addition to Sir George Farrar himself. If the resolution passed at the meeting to limit the Board to seven members is to be observed, it would seem that Sir George Farrar's promise to appoint more French representatives will have to be modified. Of Mr. Ross Skinner's appointment it is enough here to say that it will give general satisfaction on the Rand, where his record is above reproach. In the course of his speech, Sir George Farrar detailed the events from April, 1910, leading up to the appointment of the Government Commission of Enquiry, with the main conclusions of which he agreed. He believed that the general manager had been temporarily deceived regarding the real position. Trouble lay in the abnormal increase in working costs, a rise of 1s. a ton making a difference of £10,000 a month to profit and working costs. The present costs were abnormal, and were certainly capable of reduction, even under the present conditions. In his opinion, they should not exceed 17s. 6d. per ton. After having outlined a policy of reform, he said he did not go back as any ornamental figurehead, but as a worker, to do what he could to restore the company to its former position. Mr. Schumacher's speech seems to have put the whole matter and the intentions of the Central Mining people very clearly and forcibly. He affirmed that the directors of the Central Mining and Investment Corporation were determined to see things put right. They intended to continue Messrs. Wernher, Beit and Co.'s policy to build up, strengthen and improve. They desired to help to restore the prestige of the gold industry. As regards the East Rand Proprietary Mines, they were prepared to look to the future and leave the past. They intended to carry out a policy of effective reform. He did not entirely agree with Sir George Farrar's argument that low working costs should be maintained. The object should be the maximum legitimate profit which must be the inducement for good mining, whereas straining for low working costs was often deceptive and an incentive to bad mining and the working of unpayable ore. He mentioned that a satisfactory feature of Mr. Clifford's report was that the screen assays of the ore milled corresponded closely with the values in the mine assay plans. The irregularities and disappointments of the past, Mr. Schumacher continued, left unaltered the fact that the property was intrinsically a very fine one. Shareholders could rest assured that the mines would be better worked in the future than in the past. We are indebted to Reuter, of course, for this reading, but we do not doubt that, whatever details may be altered by the full report of the speeches, it is safe to conclude that a compromise has been reached in the best interests of the shareholders and reflecting credit on all concerned.

THE NEW SPIRIT IN RAND MINING.

A new spirit has lately been evident on the mines of the Rand. Though some might question its novelty on the ground that it was never entirely absent before, its marked intensification of late seems to us fully to warrant the description. Briefly, it is the growth of the communal spirit among the workers on each mine, the quickening of interest between manager, staff and men—the coming, in fine, of the feeling that animates the dwellers in the colliery villages in Great Britain. And its advent, needless to say, is to be welcomed for many reasons. Evidence of the change is furnished by the thought and expense lavished on the homes of the workers, by the anxiety to discourage frequent dismissals, by the increased efforts to promote the comfort and welfare of every man on the mine. It is difficult to describe adequately the change in conditions, since it is unequally marked on different mines and since it is none the less real because partly intangible. No one who has recently visited the mines and compared things—the men's attitude and outlook—with what they were a few years ago can, however, fail to be struck with the reality of the transition. To what the change is mainly due we do not pretend to know. It may be that the realization some years ago of the prevailing kaleidoscopic conditions is only now producing fruit in the shape of improvements. It will be remembered that it is not so long since the industry woke up to the economic advantages of what in the United States is termed " the square deal " with the workmen. In our columns prominence was given to what had been done and what remained undone in order that the lot of the worker on the Rand might be brightened, bringing contentment in greater measure to him, and to his employers profit and credit. It may be, of course, that the reason for the amelioration is to be found simply in the new ideas and new blood recently introduced into the counsels of the industry. Indeed, we know, and gladly recognise, that it is the fixed determination of some of the new consulting engineers—who are, after all, the technical leaders of the Rand—to make living conditions on the mines more homelike and satisfying and less productive of the bird-of-passage proclivities now, happily, far less pronounced than formerly. In this, we are convinced our new engineers and mine managers are displaying their wisdom and following a policy that is bound abundantly to reward them in the years to come. The fruits of that policy do not need any elaborate description. Happy and contented workers mean better work, loyalty in time of trouble, and the identification of the workers with their tasks, which is the basis of true efficiency. They mean, for instance, that in the big fight against miners' phthisis, which is now in progress, the men will come to study their own safety and, what is equally important, that of their fellows, and that they will insist on preventing a brother miner from needlessly throwing away his life through carelessness or foolhardiness. Indeed, without greater zest in co-operation and a more marked spirit of comradeship among the men themselves nothing that others may do can stamp out this evil. Every well-wisher of the industry must, therefore, hope to see the new spirit intensified. Dismissals may be less frequent than they were. It must be the business of every mine manager on the Rand to see that they are still further reduced. Housing accommodation is excellent on several mines to-day. It must be made satisfactory on all the other mines as well. To ensure that the residents on every property should live like one happy family is perhaps a counsel of perfection But the ideal must be pursued, and nothing left undone to improve the lot of every dweller on the Reef. The result must surely be worth all the trouble, for only in this way can the industry secure the best results from its workmen, triumph over the meddlesome interference of the agitator, and negotiate the inevitable jars brought about by economic changes.

PHTHISIS DEVELOPMENTS.

The summary of the report of the West Australian Commission on Miners' Phthisis, which appeared in our last issue, has aroused much interest. That a Commission appointed by a Labour Government should have made such recommendations seems to have surprised the Labour Party here, in the bright lexicon of which there is apparently no such word as moderation. It should be added that in an appendix to that report it is recommended that boards of experiment be created to test inventions for improving ventilation, laying dust, and preventing accidents, and that areas should be laid aside as settlements for disabled miners. The Commission rightly holds that tuberculosis should be treated differently from pneumonoconiosis (or miners' phthisis) because the former spells danger to the whole community, while the latter only affects the sufferer. The publication early in the week of an unauthorized forecast of the report of the local Medical Commission on the subject has quickened interest, and justified the worst fears expressed in these columns. According to that forecast, the Commission medically examined over 3,000 men who had been engaged in mining in the Transvaal. Of these, rather more than a thousand, or over 30 per cent., were found to have miners' phthisis. Over 1,100 of the men were South Africans, and over 300 of them, or about 27 per cent., were affected by the disease. England contributed about 1,300 of whom about one-third were affected. The remainder included contingents from practically every quarter of the world. Their previous occupations differed almost as widely as their nationalities, for, while over 1,100 had always been miners, the rest had been variously employed in farming, skilled trades, commercial, clerical, police and railway pursuits. The facts collected will go to show that even after six months' work with drilling machines, the disease could be detected in 1½ per cent. At 30 months, more than a fourth showed symptoms. After another twelve months the proportion affected exceeded 40 per cent. Four and a half years lifted it to nearly 55 per cent., and five and a half to nearly 64 per cent.; six and and a half years with machine rock-drills saw the malady extended to nearly 70 per cent. For each additional year of service the percentage rose until at 10½ years it exceeded 80 per cent. At 13½ years it was nearly 90 per cent, and at 15½ years it attained 100 per cent. For hand miners the figures are not so bad. Nevertheless this section of the men examined showed over 20 per cent. affected after 30 months' work. At five and a half years the percentage exceeded 30 per cent.; at nine and a half it passed 40 per cent.; and at 15½ it attained 50 per cent. Averaged over both classes of miners, the proportion found to be affected was rather more than 20 per cent. for miners of thirty months' service. A year later it passed 30 per cent. At the fifth year 40 per cent. was passed; at the seventh year 50 per cent.; and at the twelfth 60 per cent. Other analyses showed that the incidence of the disease varies somewhat from mine to mine, chiefly, however, in proportion to the extent to which machine rock-drills were employed, but no class of underground workers went scatheless. Some of the members of the Commission think it probable that the averages yielded by the men who passed through their hands are higher than those which would be obtained from a compulsory examination of every underground worker on the Rand. The broad conclusion of the inquiry is, that no machine rock-drill miner who keeps on for about sixteen years at the work escapes miners' phthisis, while of hammer men about 50 per cent, may escape under favourable conditions. Among the other groups of underground workers, the proportion who escape is much higher, but the less fortunate are still a seriously large percentage of the whole. Some members of the Commission believe that improvements in preventive appliances and in the general conditions of work are progressing much more rapidly than is generally supposed, and that the new committee which is to be appointed will ensure a co-operation between the mining houses and the Government that will before long put the Rand in favourable contrast with Cornwall, Bendigo and the mining fields of the United States, a consummation devoutly to be wished.

THE POSITION AT BENONI.

The Alleged Failure of the Slimes Plant—The Capital Expenditure Account—Prospects by no Means Unfavourable

SHAREHOLDERS of the Benoni Consolidated Gold Mines, Ltd., and to some extent, also, the public, have been criticising the affairs of the company pretty freely lately, and the usual suggestion of an outside enquiry has already made its appearance in the Press. In our last issue there appeared a circular issued to the Press by the Board in which it was stated that there had been no difficulty whatever with the reduction process except in the matter of slime treatment. The trouble in connection with the latter operation was due to the fact that the screws attached to the Arbuckle cones had not effectively elevated the slime which the cones are capable of settling. As a matter of fact they are only capable of handling about half of the slime product which is delivered to them at the bottom of the settling or collecting cones. At the E.R.P.M. trials which were referred to nearly twelve months ago in the *S.A. Mining Journal*, similar difficulty was experienced, but it was hoped that later modifications devised for the Benoni plant had practically solved the problem of the screw elevators. In order that there might be no uncertainty about the working of the slimes plant, however, the Consulting Engineer was careful to provide an alternative arrangement of centrifugal pumps, such as are in common use for the purpose, and seeing, apparently, that the screw device was likely to hang up slime treatment unduly, the centrifugal pumps were finally put into operation the other day. As the circular states, "it is anticipated that in future the whole plant will run smoothly and without stoppage." Altogether, then, the excitement of shareholders and the public with regard to the Benoni plant has been a sort of cyclone in a tea-cup. It is interesting at the moment, however, to review the operations of the company during the past year, as far as they are to be learnt from the published reports. At the annual meeting in March last the ore reserve, on revaluation, was stated to be as follows:—

	Mill Tons.	Milling Value. Dwts.	Milling width. Inches.	Sorting. per cent.
Payable	606,177	6·47	43·12	12·30
Unpayable ...	362,507	3·28	44·82	11·74

In addition to this there were 200,248 tons of partially developed ore, calculated on a stoping basis over an average width of 47.75 inches. During the quarter ended 30th June there was no development work carried out, and the figures in regard to ore reserves remained, therefore, as above. In the succeeding quarter development was still discontinued, and only such work as was necessary in equipping and completing arrangements at the shafts was effected. The reserve figures were, thus, as before, but the partly developed ore, which was not considered sufficiently exposed to be included in the reserves, was estimated at 213,116 tons of ore, and the proportion of payable ore to ore developed was 62 per cent. As far as we can learn the development during the last quarter of 1912 was not sufficiently extensive to alter the figures given above to any great extent.

THE FINANCIAL POSITION.

At the 31st December, 1910, the unexpended capital amounted to £23,895, of which £23,862 was cash in the banker's hands. Sundry debtors and payments in advance totalled £13,112, and sundry creditors and machinery on order and contracts uncompleted figured, so that there was a small debit as the result of operations to that date. The Chairman explained that satisfactory terms had been arranged with the National Bank under which that institution would advance the company up to £150,000 at a reasonable rate of interest on the money required, repayable in half-yearly instalments over a period of five years. The following figures were quoted in connection with the estimated cost of the plant, and much of the work upon it was said to have been done.

Crushing and sorting station	£19,184
Mill and conveying plant	35,442
Tube mill plant	15,400
Sands and slimes plant	32,494
Waste dump conveyors	3,850
Electric supply	32,856
Sub-stations and power lines	5,300
Compressors	5,109
	£149,635

No details were given as to the actual amount of money that would be necessary to put the property on a self-supporting basis, but we are probably not far wrong in assuming that the assistance of the National Bank has been taken advantage of up to the limit of the arrangement entered into, and that the company has started on its career with a debt at least equal to that amount. Presumably no further capital expenditure to a material extent will be required. According to the circular there were put through the mill to the end of December 20,783 tons, of which 6,123 tons were put through the mill only. The fine gold recovered was valued at £11,595. It takes some time for absorption of gold, and owing to want of labour crushing is only proceeding at the rate of about 13,000 tons per month instead of 20,000. On the latter basis profits of approximately £10,000 per month may be looked for, so that even with the heavy debt, which by the way is to be wiped out over a period of five years, the prospects of the company are not nearly so depressing as would appear from the outcry of individuals in the newspapers and elsewhere. According to the latest reports the cyanide plant is doing excellent work, the sands residues being worth 0·4 dwts., and the slimes residues ·08 per ton.

South Randfontein Deep.

QUARTER ENDED 31st DECEMBER.

The following are particulars of work done on the property of the above-named Company during the quarter ended 31st December last:—The Main Incline Shaft was sunk 203 feet, making a total depth of 1,175 feet, at which point sinking was stopped. The footage done on crosscutting and driving was 1,822 feet. The footage sampled on the Randfontein Leader was 385 feet, giving an average assay value of 3 dwts. 4 grs. calculated over 36 inches, and on the West Reef 352 feet, giving an average assay value of 4 dwts. 22 grs. calculated over 36 inches. The buildings, machinery, and plant are in good condition.

River Diggers' Congress.

The Vaal River diggers held a congress at Barkly West this week, at which for the first time the Government was officially represented by Mr. Warington Smyth, Secretary of the Mines Department. All the local parliamentarians were present, and there was a large attendance of delegates. Emphasis was laid on the visit of General Smuts, from which much is expected during the ensuing session of Parliament. The principal subjects discussed were the return to a three Judge Court, instead of trial by jury, illicit diamond buying, cases for the Appeal Court of diggers whose licences had been cancelled, the deportation of illicit buyers, and the exemption of diggers from the mining profits tax.

DIVIDEND PAYERS IN DECEMBER.—I.

A Review of the Promise and Performance of Some Profit Distributing Rand Mines.

Meyer and Charlton.

First on the list in the alphabetical order of our dividend table of December 23rd last comes the Meyer and Charlton, and it is worthy of the position in other respects, also, for the month of December marked a record profit of £14,008, or equivalent to nearly 17 per cent. of the total dividend of £80,000 declared for last year. A steady increase has been made month by month since the mill was restarted in the beginning of June last. Profits in 1910 amounted to £107,616, and during 1911, in spite of a cessation of milling for about three months, to £93,249.

New Goch.

The falling off in stope values, which was first referred to in the August announcement, does not appear to have been improved, and the December profits, £7,769, are the lowest that have been recorded for a very long while. The 1910 profit was £140,627, and that for 1911, £127,918.

Van Ryn.

This company has been steadily improving lately, and the last three monthly outputs have been distinctly encouraging at a little over an average of £25,000.

Ginsberg.

The highest profit of the year was declared in December at £5,611. It is a record, in fact, after a year of steady improvement. The profit for December, 1910, was £4,097.

Glencairn.

The Glencairn also made a record profit for the year in December at £2,934, and a similar upward movement was observable during the year at the last-named property.

New Primrose.

The New Primrose, on the other hand, has shown a fairly progressive falling off, the profit in December being £17,020, as compared with that of £19,016 in the corresponding month of the previous year.

New Unified.

This is another mine that has advanced slowly but steadily, the profits in the month of December, 1910 and 1911, being £3,653 and £4,779.

Witwatersrand.

After a drop to £10,215 in July from £18,232 some twelve months ago, the profits have been rising satisfactorily again, and were for last month £15,532.

New Rietfontein.

In its small way this mine improved considerably during the year, profits being £39,395 for the year, as against £15,625 for 1910. After a spurt in September and October, there has been a falling off, however, in some degree, and, generally speaking, although the tendency has been upward during the past twelve months, it has been by spasmodic and irregular movements.

City and Suburban.

It is hardly necessary to draw special attention to the remarkable progress made by this mine, for the matter has been referred to more than once recently in the *S.A. Mining* Journal. It suffices to say that a profit of £10,500 in December, 1910, increased steadily and consistently to one of £17,000 last month, and whereas the total estimated profits in the previous year amounted to £99,554, they increased to £173,854 last year. On this amount a dividend of £153,000 was paid, equal to 11¼ per cent. There appears the prospect of an enhanced dividend in the immediate future.

TRANSVAAL CHAMBER OF MINES.

Points from the December Report of the Executive Committee.

Native Labour.—The returns supplied by the Witwatersrand Native Labour Association, Limited, show the following results for the month of December :—Number of natives employed by members of the Association on last day of month (including natives in the service of mine contractors but excluding natives in the employ of members of the Association in the districts of Barberton, Breyten, Rooiberg and Louis Moore) : On gold mines—November 176,736, December 178,282; on coal mines, November 8,043, December 8,053; on diamond mines, November 10,071, December 8,914; total, November 194,850, December, 195,249.

Recruiting Results.—The Witwatersrand Native Labour Association also furnishes the following information with regard to the natives recruited by the Association and its members during the month of December, 1911, and the districts whence they were obtained. These figures do not include natives recruited by mine contractors. The corresponding figures for the month of November are given in comparison.

Source.	November.	December.
East Coast—South of Latitude 22 deg. S.	3,589	3,402
North of Latitude 22 deg. S.	1,295	913
Cape Province	3,357	4,051
Transvaal Province	659	572
Basutoland and Orange Free State Province ...	813	801
Bechuanaland	31	33
Natal Province	1,085	1,012
Swaziland	443	489
Rhodesia (including via Pietersburg)	21	91
Local	5,281	6,022
	16,574	17,386

Natives Employed in Labour Districts of Transvaal.—The monthly report issued by the Department of Native Affairs shows that at the 30th November, 1911, 295,169 natives were employed in labour districts of the Transvaal. Of this number, 207,086 were engaged on mines and on the various classes of works specified in Part I. of the Coloured Labourers' Health Regulations, 1906, and 88,083 were in other employ.

Control of Natives and Illicit Labour Traffic.—A sub-committee of your Chamber had the opportunity of discussing this question with the Commissioner of Police and various police officers stationed in the mining districts of the Witwatersrand. Correspondence is still taking place between the Government and the Chamber on the subject, and your Committee has assured the Government of its desire to co-operate in every possible way in maintaining order and reducing the risk of illicit traffic along the reef.

Water Supply for the Mines.—In order to assist the Rand Water Board in making arrangements for a scheme for additional water supply for the Witwatersrand a circular has been issued to the various mining groups asking for full particulars with regard to privately owned water supplies conserved by the mines.

Standard Weights of Lime Sold.—The attention of mining companies whose companies are situated within the municipal area of Johannesburg has been directed to the provision of Bye-law No. 33, as amended by notice in the *Provincial Gazette* of November 30th, 1911, to the effect that lime must in future be sold net weight as follows :—White Lime (unslaked) 200lbs. net; White Lime (slaked) 180lbs. net; Blue Lime 160lbs. net. Unless the actual net weight contained in the bags is clearly stated on the delivery notes it will be presumed under the bye-law that each bag contains the standard weight.

Mr. F. R. Lynch and Mr. Chas. Marx having resigned their seats on the Executive Committee, the vacancies must, in terms of Article 41 of the Chamber's Constitution, be filled at the Ordinary General Meeting on January 18th. Nominations will therefore be received by the Secretary before or at the meeting.

Representation.—The following change in representation has been intimated :—The African and European Investment Co., Ltd., Mr. George Falcke *vice* Mr. F. A. E. Wells.

THE GEOLOGY OF THE WITWATERSRAND.

Characteristic Features of Particular Sections—Dr. Mellor's Conclusions from the Evidence of East and West—The Results of Longitudinal Faulting—Conditions of Deposition of the Witwatersrand System.

In the two previous issue of the *S.A. Mining Journal* we have given a summary of Dr. Mellor's conclusions with regard to the geology of the Witwatersrand generally. On this occasion we may refer in detail to his remarks concerning particular sections of the Lower Witwatersrand System, and to his opinions regarding the system of faulting which exists along the Central Rand and its effects on the structural arrangement of the various groups of beds affected by it.

THE WITPOORTJE SECTION.

" A favourite section for reference, and one usually regarded as fairly typical of West Rand conditions," says Dr. Mellor in his recent communication to the Geological Society of South Africa, " is that seen at Witpoortje, figured and described by Molengraaff, whose section has been generally accepted as representing the conditions found in that locality." The Witpoortje section is, however, by no means so straightforward as it appears, we are informed, except from the Main Reef Series down to the Green Quartzites, where there is shown one of the clearest and most accessible sections to be found on the Rand. From and including the Green Quartzites downwards, on the west side of the well-known gorge, the section is probably one of the most misleading. A different and much better section is to be found on the east side of the gorge, commencing at the station and going northwards towards some conspicuous shafts on the Promise Reef. Along this line, with the exception of some small diabase intrusions, the section is normal and continuous down to the base of the Green Quartzites. Here a longitudinal fault occurs, and the Green Quartzites, together with other beds, are duplicated. The normal portion of the Witpoortje section, down to the base of the Green Quartzites, is shown in our issue of the 6th inst. There is no difficulty in correlating the Florida and Witpoortje sections with regard to the beds from the base of the Green Quartzites to the Main Reef Series, or with regard to that portion, in other words, in which the greatest difference between the Central and West Rand sections is supposed to exist. It is interesting, therefore, to see in what way the Florida section differs from those seen nearer Johannesburg. For this purpose the country immediately to the north of Florida and Maraisburg is particularly instructive. As will be seen from the map published in our last issue, as the individual bands of quartzites and shales are followed eastwards they are cut off in succession on, or near, the main line of fault, after undergoing a gradual diminution from their full width to mere fragmentary bands. " Here, then, we have," says Dr. Mellor, " a very clear example of the elimination from the apparent section of the Lower Witwatersrand System of some three thousand feet of quartzites and shales within a distance along the strike of little more than two miles. As a consequence we have lines of section as close together as those through Florida and Maraisburg presenting results almost as different as the sections usually regarded as typical of the West and Central Rand. Here, however, the elimination of so many characteristic beds and the great reduction in thickness can be shown to be due, practically in its entirety to faulting."

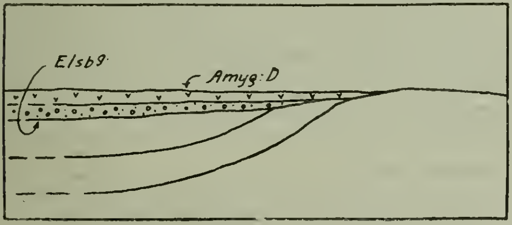


FIG. 1.

THE BRIXTON SECTION.

In the township of Brixton, particularly along the line of Chiswick Street, a section is to be seen which at first sight appears quite complete; and one which might be easily correlated with the exposures immediately east of Johannesburg. As will be seen from the map referred to, however, the occurrence of a fault eliminates from this particular section the two upper members of the group of Hospital Hill Quartzites. Practically the whole series above the Hospital Hill Quartzites, as far as the Government Reef, is represented, nevertheless, " the horizon of the Coronation Shale being nearly coincident with Collins Street, and the Government Reef being found about one hundred yards south of the lower end of Wimbledon Road, and a short distance west of the south beacon of Brixton."

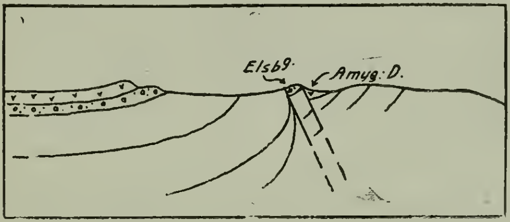


FIG. 2.

SECTION NEAR RIETFONTEIN.

It will now be of interest, before considering the very modified section in the immediate vicinity of Johannesburg, to follow a line on the southern portion of the farm Rietfontein 145, to the east, where the whole formation opens out again somewhat, and where " a section is to be obtained " in which all the main horizons of the West Rand sections " are again recognisable, from the Contorted Bed upwards " to the big quartzite above that which contains the Gov- " ernment Reef, while all the principal horizons below the " Contorted Bed can also be recognised if the formation is " followed still further east. Perhaps the most complete " view of this section," it is stated by Dr. Mellor, " can be

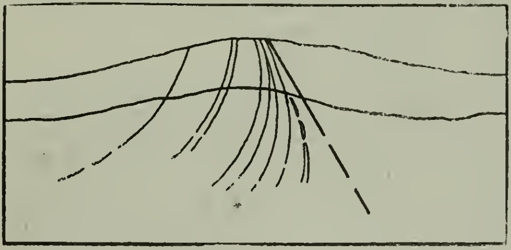


FIG. 3.

obtained along the line of an old prospecting trench about three-quarters of a mile east of and parallel to the west boundary of the farm Rietfontein, and easily accessible from Sialkot Station on the Pretoria line. Midway along the trench near an extensive quarry cut in the Coronation Quartzite stands an old boiler, which, being the most conspicuous object in the neighbourhood, forms a good guide to the locality. Especially well shown on or about this line are the lowest of the Hospital Hill Quartzites, and the quartzites and shales from the Coronation shale upwards. With regard to the beds between the lowest Hospital Hill Quartzites and the Coronation Shale, the section is not so fully complete, although the main features of the normal section are all represented, including the upper members of the Hospital Hill Quartzites and the quartzites associated with or lying above the Promise Reef horizon." The effect of faulting is again plainly in evidence here, and a gradually diminishing width of outcrop among the beds, as indicated on the map, may be observed in a westerly direction. In this case, as in others, the examination of the section indicated should be aided by occasional traverses to the east and west, where better exposures may be found. For instance, the Government Reef is only well seen a few hundred yards east or west of the trench, and the Coronation shale horizon is best seen about one hundred yards east of the main road leading from near Driefontein on to Barrett's Rietfontein, about half a mile west of the trench.

"It will be seen that the conditions about the southern portions of Rietfontein are very similar to those found at Florida. . . . . . A further analogy between the two is seen in that in both cases, as the formation is followed towards the Central Rand, there is a rapid reduction in the width of outcrop both of the section as a whole and of its component units, which is clearly mainly due, not to any original diminution in thickness of the beds, but to the strain and faulting to which they have been locally subjected." It will be understood from these instances how greatly the Central Rand sections have been modified, and how little they are representative of the original section either in respect of thickness or succession of the beds. "From a comparison of the sections at Florida on the west and Rietfontein on the east, and at several intervening localities, it appears at least highly probable that the Central Rand section was originally very similar in every respect to that now shown by the West Rand, and that the great differences between the apparent sections can be accounted for almost entirely as the result of the great tectonic changes which have taken place in the district."

RELATION OF FAULTING TO STRUCTURE.

At the end of his paper Dr. Mellor deals with the character of the longitudinal faulting along the Lower Witwatersrand horizon, and endeavours to explain the phenomena observable along the several lines of section referred to above. Such, for example, as the presence of the older granite practically in contact with the Hospital Hill Quartzites, the high inclination, usually vertical and sometimes overtilted, of the beds on the south side of the fault, and the different and much lower dip of the beds on the north side of it. The main result of the faulting is a downthrow on the north, and a simple explanation "which would account for almost all the observed facts, would be that there was originally a comparatively simple fault along the line in question, with a downthrow to the north increasing from west to east, and subsequently there had been great pressure in a north and south direction by which the beds south of the fault had been overtilted and the downthrow portion practically thrust over them approximately along the plane of the fault. To this latter movement would be due the appearance of a broken fold shown by the beds on the south of the fault as well as the elimination of portions of the sequence and the apparent carrying of the granite over the edges of the adjacent sedimentary beds." This condition of things is partly indicated by the accompanying diagrams, reproduced from our issue of the 25th November last. The outcrops at the two different contour lines in Fig. 3 show how the appearance of elimination of particular beds would result from the action of the fault at various points along its course.

THE ELSBURG SERIES.

The relationship of the Elsburg Beds to the Witwatersrand System in general is suggested in Fig. 1. Dr. Mellor remarks in this connection: "Recently the view that these beds are unconformable to the Witwatersrand System has gradually gained a large measure of acceptance, and the manner in which they appear to follow the Ventersdorp amygdaloid has led to them being definitely placed in the Ventersdorp System by Drs. Hatch and Corstorphine. The evidence of the Elsburg Beds being unconformable to the Lower Witwatersrand System is indeed very strong, even on the Central Rand, as shown in my previous paper (*Trans. Geol. Soc. S.A.*, vol xiv., 1911, p. 34), but this does not necessarily involve unconformity with the upper part of the same system, nor the removal of the Elsburg Beds from it. So far I have been unable to find evidence of any distinct break between the Elsburg Beds and the upper portion of the Witwatersrand System, although good and continuous exposures are to be found." The reconciling of these opposite views is attempted by Dr. Mellor, as shown in Fig. 2, a diagram which sufficiently explains itself. "The Elsburg Series," he adds, "would form a very natural sequel to the succession of rocks represented in the Witwatersrand System, and would find analogues in many similar formations in other parts of the world."

CONDITIONS OF DEPOSITION OF THE WITWATERSRAND SYSTEM.

Discussing, in conclusion, the conditions of deposition of the Witwatersrand System, he remarks: "The conglomerates of the Rand are usually regarded as products of deposition along an actual shore-line. The conglomerates of the lower portion of the system, and also those of the Main Reef Series itself, are, however, in my opinion, much more suggestive of deposition under estuarial, or rather deltaic conditions on a very large scale, alternating with comparatively deeper water conditions, and the whole suite of deposits points to an interrupted but on the whole progressive cycle of changes from the moderately deep water conditions of the lowest portions of the system, through deltaic phases represented by the persistent conglomerates of its middle portions to actual shore conditions exhibited by the uppermost beds, including the Elsburg conglomerates. The latter are much more suggestive of true littoral deposits than any of those occurring at lower horizons, for these latter possess many characteristics, which can scarcely be explained if the conglomerates are regarded as actual shore deposits, but which might more easily be accounted for as resulting from deposition in an extensive deltaic area."

We have only been able to give a comparatively brief summary of Dr. Mellor's valuable and most interesting paper. As already mentioned, it is in course of publication by the Geological Society of South Africa, for whom it was prepared, and we have little doubt that there will be a large number of applications for copies even by those who have not the privilege of being members of the Society.

The Danger of Spraying to Allay Dust.

To avoid the danger of causing an epidemic of hookworm disease through the sprinkling of mines, it is necessary to mix various substances in the water such as salt, calcium chloride, or ferrous sulphate. A 1 per cent. solution of ferrous sulphate or a 2½ per cent. solution of salt is quite strong enough. These solutions keep the roads damp for a longer time than water alone. The efficacy of the salt solution was proved in the Dolcoath epidemic, where the only mine unaffected was one where a considerable quantity of sea water came into the mine, and in mines on the Continent calcium chloride or ferrous sulphate have proved efficacious. These remedial measures might be introduced into Rand mines, where ankylostomiasis has been prevalent. Thorough ventilation is also useful for stopping the disease.

MINING IN MANICALAND.

Recent Progress—Some Altered Outputs—New Mills Start.

The journal of the Mozambique Company contains the following brief quarterly review of mining in Manicaland:—The gold produced in the territory during the quarter ended September 30th shows a small decrease on the previous quarter and a considerable diminution compared with the third quarter of last year. The latter is explained by the absence of production of the Braganza-Richmond owing to the mill being closed down for development work and addition to surface plant, and also partly owing to the lesser production of the Guy Fawkes mine this year as compared with last. The Central Welcome this quarter shows a considerable fall in the grade and a consequent decrease in the output. The workings at this mine are too scattered and too far away from the battery, and no good results can be forthcoming till a proper mechanical system is installed to get the ore to the mill. The Guy Fawkes mine shows an improvement of 146 ozs. 17 dwts. 5 grs. on the previous quarter, and it is hoped this improvement will continue. The Laurier closed down at the end of July in order to consider the advisability of raising more capital and of installing a cyanide plant. The Chimezi-Rhodes Banket shows a small reduction compared with last quarter owing to the mill being closed down in July on account of the erection of a 3-stamp mill of 350 lbs. We understand that the aerial haulage is now completed, and it will be possible to increase the tonnage milled. The Thursday Reef started crushing again in August, but the values are still low. The gold is difficult to catch on the plate owing to the ore containing a large quantity of ironstone. There was a considerable improvement in the values in September, and we understand that the development in the mine shows greater promise. Should the values continue to improve it will probably be advisable to instal a cyanide plant. In August the alluvial prospection of the Revue River and its affluents was commenced by the Andrada Mines, Ltd., and a large amount of preliminary work has been done. The conditions met with are different to those prevailing in other countries, so that special machines will be required to suit the ground. The results proved so far are favourable in many ways, but much more work will be done before any machinery is installed. Two small propositions are about to start. Mr. Pilgrim is erecting a small battery on the Chesterford claims, and Mr. Humphrys, who is tributing the Crocodile claims belonging to Mr. Aubert, is also installing a battery on these claims.

ALLUVIAL PROSPECTING.

In August last the engineer, Monsieur L. C. de la Marlière, and his assistant, Mr. Cahill, arrived at Macequece to commence the prospection of the alluvials of the Revue and its affluents, for the Andrada Mines, Ltd. A camp has been located near Andrada, and near the junction of the Zambuzi and Revue Rivers, which is a central position for a workshop, camp for the boys, etc., in order to prove the value of the alluvial in this neighbourhood. The prospecting work has been vigorously pushed forward. Up to the end of September some six shafts have been sunk, and four more are in progress, which have proved about three metres of overburden and three of gravel. The latter is in two layers, the higher one being poor, the most of the gold being in the lower yellow layer. The values found in the shafts already sunk are said to be satisfactory. The mechanical conditions are favourable; absence of trees, of large boulders, soft bed-rock and cheap water power, but there is so much overburden paying absolutely nothing and carrying clay, that it will be impossible to dredge it without a special method. The only way to work this ground will be by means of enormous and special machines (two or three at least), each of which will treat about 100 claims; and fortunately the company possess a great reserve on the Revue and its affluents. The prospection now being carried on is only of a preliminary nature, the prospecting shafts being put down some 300 metres apart. It is hoped to complete 30 or more shafts this year. Next year it is proposed to put down intermediate shafts 50 to 100 metres apart, and to bore in between these shafts with Keystone drills, together with 20 diaphragm pumps and employ 500 boys. We hope that the prospecting will be favourable, and that in two years there will be a steady production of alluvial gold, the working and recovery of which will greatly add to the prosperity and progress of Macequece and the neighbourhood.

Sir Julius Wernher's Retirement.

The following is the text of the circulars which Messrs. Wernher, Beit and Co. and L. Breitmeyer and Co. issued, and of which cabled summaries were published recently:—

1, London Wall Buildings,
London, E.C.,
December 30, 1911.

Dear Sirs,—We beg to inform you that our senior partner, Sir Julius Wernher, Bart., retired as from January 1, 1911, from the diamond branch of our business, which will be carried on as from January 1, 1912, under the style of L. Breitmeyer and Co., who have taken over all its assets and liabilities.

We should thank you to take note of the enclosed circular of Messrs. L. Breitmeyer and Co.

The firm of Wernher, Beit and Co. will be dissolved by mutual consent as from the 31st inst. The liquidation of the business will be conducted at this address, to which all communications should be sent. The authorities of those heretofore empowered to sign for the firm will be continued during the liquidation.—We are, dear sirs, yours faithfully,

WERNHER, BEIT AND CO.

29 and 30, Holborn Viaduct,
London, E.C.,
January 1, 1912.

Dear Sirs,—With reference to the enclosed circular of Messrs. Wernher, Beit and Co., we have the honour to inform you that all assets and liabilities of the diamond business of that firm have been taken over as from January 1, 1911, by Messrs. L. Breitmeyer, F. Eckstein, H. Hirsche, F. Hirshhorn, L. Phillips, L. Reyersbach, C. Rube, R. W. Schumacher, L. Wagner, who will continue the business under the name and style of L. Breitmeyer and Co. The signatures authorised for the partnership are given at foot, including that of Mr. Louis Gilau, who is empowered to sign by procuration.—We beg to remain, dear sirs, yours faithfully,

L. BREITMEYER AND CO.

Mr. Isaac Hodges, recently director and general manager of the Whitwood Collieries, in Yorkshire, has taken over the general management of the Vereeniging Estates, Ltd., including the collieries and brick and tile works. Mr. Hodges inspected the estates and works during the month of September last, and, as a result, resigned his appointments in England to come out to Vereeniging. The Whitwood Collieries are amongst the largest groups of collieries in England, having a coalfield of 25 square miles, and an output upwards of 1,000,000 tons per annum, with engineering works, chemical works, gasworks, brick works, private railways, and shipping staithes, giving employment to 5,000 workmen. Mr. Hodges was vice-president of the Institute of Mining Engineers, president of the Midland Institute of Mining, Civil and Mechanical Engineers, member of the Executive Council of the Mining Association of Great Britain, member of the Board of Examination for Colliery Managers' Certificates for Yorkshire and North Midlands, and is a past president of the National Association of Colliery Managers. He has brought out a mining staff, with manager and engineer, to sink and equip a new colliery in connection with the requirements of the Victoria Falls and Transvaal Power Company's station, now in course of erection.

MOOIFONTEIN DIAMONDS.

A New Venture—The Prospectus Reviewed—The Essential Question of Water.

A copy of the prospectus of the Mooifontein Diamond Fields, Ltd., appears in the advertisement columns of this issue. The company is being formed to acquire an option to purchase a certain portion of the farm Mooifontein No. 128, district Bloemhof, in extent 3,430 morgen and 240 square roods, and " all rights, renewal moneys, revenues, profits and other benefits which may belong or accrue to the owner of the said property under and by virtue of " certain agreements, water-rights, hotel, club, bottle store and liquor rights, trading rights and " the sole and exclusive right of laying out and establishing a township " are also to be acquired. It is further provided as a principal object of the company: " The sole and exclusive right in the event of the aforementioned option being exercised, to buy the said portion " B " of the farm Mooifontein out and out against a further payment of a sum of £40,000 sterling at any time within a period of seven years reckoned from the 29th December, 1911; subject to the condition that in the event of a payable diamond mine at any time thereafter being discovered on the property and worked, the owner shall be entitled to five per centum of the net profits realised by the option holder, his successor in title or assigns from such mine." The nominal capital of the company is fixed at £60,000, divided into 240,000 ordinary shares of five shillings each. Fifty per cent. of the capital or 120,000 shares are to go to the vendor, and there are to be offered for public subscription to provide cash capital, of which £21,000 will be required in the purchase of the rights under option and the balance subscribed will be available for working capital. That is to say after purchase of the rights there will remain £9,000 as working capital. The directors are Messrs. W. K. Tucker, H. A. Young, S. H. Coronel and O. J. J. van Wyk. The interests of the directors are set forth as under:—Mr. O. J. J. van Wijk is interested in the sale of the aforesaid option to the extent of 8,000 shares, to be paid him by the said W. C. van Ryneveld, as commission for services rendered. Mr. S. H. Coronel is interested in the sale of the aforesaid option to the extent of two-fifths of the purchase price thereof, less 4,000 shares, for services rendered in the promotion of the company. Mr. William Kidger Tucker is to be appointed managing director of the company in terms of the proposed deed of sale with the vendor at £3,000 per annum. A report addressed to S. H. Coronel, Esq., and signed A. F. Crosse accompanies the prospectus. In the couse of this Mr. Crosse states that he is unable to express an opinion on the approximate quantity or value of the gravel on Mooifontein. In concluding his report, he states: " Given that the present high price of diamonds will be maintained, and that the diggers will be able to obtain a regular and cheap supply of water, I know of no reason why the present activity of the diggers on the property should diminish until the gravel becomes exhausted." *Inter alia* the prospectus states:—The Mooifontein alluvial diamond diggings at present embraces some 797 morgen of the above portion of the farm. The receipts of the owner from all sources in November last, when only 347 morgen were proclaimed, have been declared by him at £1,033 6s. 11d. The present monthly revenue, it is believed, could be greatly increased under efficient management. The returns from 450 morgen, proclaimed on the 13th inst., are not yet ascertainable. This 450 morgen represents a further claim area of some 19,350 claims, the whole of which has been thrown open to the public with the exception of 700 claims reserved and sold by the owner. Taking the Mooifontein alluvial field, as at present proclaimed, as covering 34,000 claims, the owner's share of licence money (assuming 20,000 of these claims to be appropriated), at 2s. 6d. per claim, would represent a return at the rate of £2,500 per month for the period they are under licence. As these claims are worked out it is proposed to proclaim further ground from time to time. The proclamation of another 2,000 morgen would create some 86,000 claims. The company would be entitled to three-tenths of these claims, namely, 25,800, and if sold at 30s. per claim, which is considered a moderate estimate, they would represent a further £38,700 profit to the company. apart from share of claim licences.

Our own experience of Mooifontein prompts us to the belief that whilst diamonds admittedly occur in payable quantities over a very considerable portion of the property, the extent of payable gravel is problematical, and, moreover, the question of water supply is likely to become acute and serious should there be a very large influx of diggers. We shall therefore follow the fortunes of the company with very considerable interest.

South-East Africa, Limited.

The past year has been a disappointing one for South-East Africa, Ltd. At the recent annual meeting the Chairman had a doleful story to tell. He said they were in the unfortunate position of finding out that the assets taken over from the old companies were practically valueless, and that not only were they compelled to make a new start, but that they had to spend a large portion of the money raised under the new arrangements in satisfying the obligations of the old companies in connection with their option contracts. They had started with the disadvantages of an inflated capital, and they had to bring in the estates of the old companies, which stood in their books at figures running to many thousands of pounds, while these estates had been found, after a very careful investigation, to be of very little present or prospective value. That was a matter which would have to be dealt with sooner or later, and the sooner the better. He need hardly tell them what a disappointment it was to him, as a new chairman who was also a partner in the firm which had subscribed the new working capital, to find this state of affairs. Having dealt with the worst side of the position, he would at once say that there was a brighter side, because the Malidyke claims might be the saving of the company, and if the developments proceeded as they had done up to now there was no reason why that property should not put the company on its legs again. It was almost impossible to prophesy anything with any degree of certainty in connection with mining, and he must tell them that the development of the property would take a considerable portion of their working capital to enable them to float it as a separate concern. This was the last shot in their locker unless some fresh capital could be raised in some other way. The shareholders would be kept fully informed as to the development, and he hoped that 1912 would improve their prospects in every way.

Mooifontein Claim Licences.

His Excellency the Governor-General has been pleased to fix and determine that, until further notice, the licence money set out in the schedule following shall be paid upon claims or portions of claims upon that portion of the farm Mooifontein No. 128, district Bloemhof:—

	Per Month.
For a claim, 150ft. by 150ft.	£2 10 0
For a portion of a claim, 90ft. by 90ft.	1 0 0
For a portion of a claim, 90ft. by 45ft.	0 10 0
For a portion of a claim, 45ft. by 45ft.	0 5 0

CURRENT AND POWER FACTOR IN INDUCTION MOTORS.

An Account of Some Practical Tests Made to Confirm a well-known Theory.

(By H. J. S. Heather.)

The following is an abstract from a paper read before the South African Institute of Engineers last Saturday night by Mr. H. S. Heather :—

When I received an invitation from your Editorial Committee to contribute a paper on the subject of my statement printed on p. 118 of the Journal to the effect that in an induction motor the power factor at constant amperes was unaffected by the speed, my first impulse was to decline, as I did not see how such a paper could be made sufficiently interesting to justify its existence. Since the invitation was given, however, circumstances have enabled me to take a number of test readings on a comparatively large electric winder, and I am therefore able to supplement a theoretical exposition, which cannot afford anything but dry reading, with the results of some practical tests which thoroughly confirm the theory. I venture to lay both before you to-night, although I do not see how any discussion can arise on the subject. This I much regret, as I think the value of a paper is ordinarily very properly measured by the amount of discussion it provokes. To begin with, I think I can show that the truth of my original statement has been very generally recognised by all who have had to do with the problem of applying the induction motor to winding, though this recognition has evidently been in some cases quite unconscious. The ordinary mechanical power-time diagram for a winding engine during the period of acceleration, assuming the acceleration to be uniform, is familiar to everyone. . . . . I think, therefore, I am correct in saying that the constancy of the power factor at constant amperes is commonly recognised, though in some cases unconsciously. The recognition, however, has by no means always been unconscious. The late Mr. A. W. K. Peirce was quite clearly aware of the fact in 1905, for at a meeting of the S.A. Association of Engineers in that year he stated perfectly definitely, *"The power factor of a polyphase induction motor is quite independent of the speed," and I have no doubt many other people have expressed themselves equally plainly. Certainly I have. I give the instance because it is a local one. Again, in 1910, I submitted to the Mines Trials Committee a suggestion for the control of induction motors for winding, the improvement involving an application of the fact I am now writing about. At my request the Electrical Sub-Committee dealing with the question was strengthened so that it included the electrical representatives of practically all groups here. Their opinion, which was of course in accordance with my own, was that the fact was a matter of common knowledge and capable of mathematical demonstration. Now, sir, I cannot help feeling that, seeing that this principle was definitely stated and not contradicted at a meeting of one of the parent societies of this Institution in 1905, that it was affirmed by practically all the leading mining electrical engineers to be common knowledge in 1910, my reading of this paper to-night, in 1912, ought to be a work of supererogation. I trust the invitation to me to deal with the matter is not to be taken as a sign that the standard of electrical knowledge on the Rand has been going down whilst the amount of electrical work has been on the increase. It is only fair to say that if there is still any haziness on the subject, it is not confined to South Africa. During the discussion on a paper of mine on the Driving of Winding Engines by Induction Motors at the Institution of Electrical Engineers in London in May, 1911, the question was raised, and I seized again upon the opportunity of expressing myself decidedly.† At the same time it must be remembered that the average standard of knowledge of the induction motor ought to be, and I believe is, higher here than it can be expected to be in England. Although, however, it may be generally admitted that there is a constant relation between constant amperes and power factor, independently of what the speed may be, I do not think any clear proof of the fact was given until I published one in the "Electrician."‡ This proof was given incidentally in an investigation by means of the Heyland diagram into the question of determining the amount of external resistance to be added in order to secure any torque at any speed. As this article is accessible to anyone, it is unnecessary to recapitulate it here, but with your permission I will give another proof, which is independent of the Heyland diagram and intelligible to anyone able to handle vectors.

. . . . .

Two most important practical results can be derived from a proper application of the above theory. The one is a method of testing the commercial efficiency of slip-ring induction motors. Of this method I published a description in the *Electrician*,§ and the editor was good enough to insert a favourable comment. This method makes it possible to get a complete efficiency curve at all loads from any slip-ring induction motor within 10 minutes after the instruments are fixed. There is no need to insist upon the value to these fields of so quick a method. Hitherto contractors' guarantees have had to be accepted without question owing to there being no quick and easy method of verifying them. There is now no reason for this state of affairs to continue. The other important result is a method of control for hoist motors, which is equal in simplicity to that used in the Ward-Leonard arrangement. If an ammeter affords a definite indication of torque at all speeds as it does, the arrangements for controlling an induction motor winder can be made exactly similar to those used with the Ward-Leonard system, and the driver need have nothing to watch during trips beyond the ammeter and his depth indicators. I have dealt fully with the practicability of using an ammeter alone for control of winders in the paper previously referred to as read before the Institution of Electrical Engineers.‖ It will now be of interest to see how far theoretical results are corroborated by actual measurements. As I stated at the beginning of this paper I have had within the past few days an unexpected opportunity of collecting some figures from a winding motor. A winding engine offers peculiar facilities for a test for commercial efficiency by my method, as the use of the post brakes affords a ready means of clamping the rotor and the water resistance enables standstill readings to be taken at all loads. The power demand for running light has, of course, to include the windage of the drums, so it is only the efficiency of the machine from the electric terminals to the drum surface that can easily be got. In the case put into my hands it was unusually easy to apply artificially a steady load, as the winder was one of those supplied by the British Westinghouse Company, and provided with an eddy current brake. The motor is rated at 1,600 h.p. for continuous running, and its synchronous speed is 100 revolutions per minute. A rope speed indicator driven off the drum shaft is attached. It was accordingly comparatively to apply a load with the eddy current brake, fix a speed with the liquid controller, and then take readings of the watts and amperes input and of the rope speed. Of course, if the theory was completely true in practice the ampere reading for a given input of watts would be constant at all speeds. I could, of course, only readily get speeds between zero and full speed. If the ropes had been on I could have got negative or backward speeds by lowering a load against reverse current. My object being to show the practical applicability of the theory on a commercial scale, I took no special care to keep record of the volts, but took them as they came from the Rand Mines Power Supply Co. There was a variation of about 5 per cent. I took in all 38 readings, but finding at the end of some time that I had got more readings in the neighbourhood of 1,100 kilowatts than anywhere else I concentrated to some extent on this figure. The whole of the readings taken are given in Table I., no elimination of readings being made on account of their accuracy being suspected or anything of that sort. The right-hand side of the table gives the observed readings multiplied by the respective constants of the instruments and the power factors deduced from the results on the supposition that the volts were constant at 2,100. The diagram Fig. 9 (omitted), gives a plotting of every ampere reading, and those ampere readings which correspond to each particular watt reading are connected together by straight lines. Rope speeds being plotted horizontally and amperes vertically, if the theory is correct the curves corresponding to the varions imputs should come out as horizontal straight lines. You will notice how nearly they do so. Attention should perhaps be called to the fact that the isolated readings are not points lying off their proper curves, but points which cannot be correlated with any others because no other readings at the same watts were taken. Fig. 10 (also omitted) is the same diagram to an enlarged ampere scale. The three readings (24), (26), and (28) give a good idea of the probable amount of error. Their maximum divergence is about 1.6 per cent. The maximum divergence from straight line values is about 5 per cent. The diagrams are what may be called commercial diagrams taken under the conditions of practical power supply and with no refinements or faking about them. The tendency to droop at both ends of the curves is particularly interesting, and I did not expect to find it with the instruments, though I thought it might be really there. It is due to the facts that the windage loss increases about as the square of the speed, whilst the hysteresis and eddy current losses in the rotor increase nearly as the square of the slip. Consequently at a given current the losses are slightly increased at very high and very low speeds. The power factor is improved by the increase in losses and a slightly smaller current should correspond to the same watts. I cannot leave this subject without pointing out the necessity for a high level of technical knowledge when electric winding engines, especially those driven by induction motors at speeds other than normal speeds. Now, although this uncertainty when it results in starting an ordinary motor badly or failing to start it (as has happened quite unnecessarily with tube mills, etc.), only causes inconvenience or wasteful use of power, the case is quite different when winders are being dealt with. Uncertainty as to what will happen electrically under any special conditions may easily, in an emergency, make the difference between saving and losing a cage full of men.

---

* *Proceedings S.A. Association of Engineers.* Vol XI., p. 94.

† Discussion on "The Driving of Winding Engines by Induction Motors." *Journal of the Institution of Electrical Engineers.* Vol. LXLVII., pp. 636, 639, 647.

‡ "The Heyland Diagram for Induction Motors and Reverse Current Operation," *The Electrician*, 27th October, 1911.

§ "A new Method of Determining the Efficiency of Slip-ring Induction Motors," *Electrician*, 21st July, 1911.

‖ "The Driving of Winding Engines by Induction Motors." *Journal of the Institution of Electrical Engineers.* Vol. XLVII., No. 210, September, 1911.

THE COMBUSTION OF COAL.

A Plea for an Official Enquiry into the Use of Transvaal Coal in Boilers.

[By Kenneth Austin.]*

The bounty of Nature is so enormous in South Africa—as described by Mr. F. A. D. H. Moseley in the issue of the Journal of Proceedings of the Institute—that the common expression, "There is too much coal in South Africa" would appear to have some element of truth in it. It might be assumed that the wasting of coal was not serious, and that therefore the subject need not be seriously considered. Many, however, have agreed with the author of this paper that the coal deposits in this country, although not claimed under national precious minerals and precious stones, etc., laws, really form the largest part of the national wealth, and that the deposits should not be simply looked upon as the property of the individual. The author of this paper does not attempt to deal with any question of law; but considers that many, if not all, will agree with him that it is very desirable that some endeavour should be made to conserve the national resources, no matter how prodigal Nature may have been with them in the Transvaal.

The author does not level any general charge of waste against users of coal, but wishes to discuss the subject of its economical combustion with the purpose of getting some points examined, and facts established, about which there is not much, if any, exact and independent information; the economical raising of steam in boilers; the fullest utilisation of all thermal values; and recovery of any bye-product which might be obtained during the economical combustion of coal. The author dealt with one aspect of the question in 1907, when the relative values of gas and steam engines were discussed; and again in 1910, when he discussed the manufacture of liquid fuel; since those dates so much progress has been made in chemical and metallurgical work, particularly with reference to the improvements which have led to the more economical use of fuel in blast furnaces, that he considers some useful purpose will now be served by a reconsideration of the facts concerned with one of the most common happenings in the engineer's experience, viz., the combustion of coal in steam boilers. Up to the present, nothing in the nature of an exhaustive official report, enquiry, or test, has been published on the subject of the use of Transvaal coal in boilers, although the most exhaustive and elaborate analyses are daily being made of the fuels used.

The purpose of an enquiry should be to establish by exact method and measurements the fullest facts about the exact composition of the coal examined, the relationship which exists between the fixed carbon contents, and the volatile part of the coal; the comparison of suitable shapes and sizes of combustion chambers; the methods of arousing combustion; the conditions which regulate the heat and the supply of air used to excite and support combustion; the effect of the recovery of by-products on combustion; methods of the recovery of by-products; and the mechanical arrangements necessary to secure the best working conditions and the highest rate of efficiency with the greatest regularity—all with the least expenditure of labour. It is interesting, at this stage, to note that consumers, or buyers, of coal have adopted a system of purchasing according to the sample and analysis, which satisfies them that good value is being supplied. When it comes to the actual consumption of the fuel in boilers and furnaces, are they sure that the fullest benefits are obtained from the material which has been so carefully purchased?

The author does not intend to enter into an exhaustive criticism or chemical examination of the fuels generally used, and refers members to the voluminous information on the subject contained in Mr. F. A. D. H. Moseley's paper before referred to; but everyone will generally agree with him, that the broad difference between one coal and another varies according to the proportions of:—(I.) Fixed Carbon; (II.), Volatiles (tarry vapours, moistures, etc.); (III.), Incombustiles (ash, etc.). Some examples of Transvaal coals have the following approximate proportions expressed in percentages:—

	Fixed Carbon.	Volatiles, etc.	Incombustibles, etc.
Sample No. 1	63	17	20
Sample No. 2	55	20	25
Sample No. 3	64	19	17
Sample No. 4	61	23	16

If the above figures are compared with British coals, which have the following proportions, some further idea may be formed of the variations now being discussed:—

	Fixed Carbon.	Volatiles, etc.	Incombustibles, etc.
Sample No. 5	53	40	7
Sample No. 6	81	15	4
Sample No. 7	80	15	5
Sample No. 8	80	16	4
Sample No. 9	79	15	6

In making comparison of the above figures it will be seen that the proportion of volatiles and ash have a great influence upon the relative values of coals. In order to deal with the larger proportion of ash present in Transvaal coals, and to provide air space in the grates, the areas of the latter have been enlarged beyond the dimensions generally adopted in Britain. When the proportions of the volatile constituents vary, then the size and shape of the combustion chambers should also be varied, and the air supply should be regulated to suit the variable constituents of the fuel. The use of dampers is not an economical method of regulating a furnace; the solid carbon which is being roughly—very roughly—converted into a gas, is then chilled, and the damper is used as a regulator, smothered by the enclosed CO2. In the first place, the solid carbon is heated; then the cold air rushes in, through fire bar openings, doors, leaks, etc., and finally, when the regulating dampers are closed all the conditions are upset, and the useful work of combustion is retarded by CO2. The process of combustion is one of constant interchange of C into CO or CO2, varying according to the supplies of C and O. These conditions apply to other than boiler plants, and the author contrasts the present boiler practice with the great progress made during recent years in the process of the reheating of steel blooms and in the huge annealing furnaces used in the great armour-plate industry of Britain, where by increasing the facilities for perfect combustion, and by improving and altering the air supplies, increased economy has been arrived at. In one case, known to the author, it has been reported that *one quarter* of the amount of fuel previously used in the annealing furnace, now produces the same heating effect as before.

The satisfactory solution of the subject in the Transvaal will be arrived at by the establishment of an exhaustive enquiry as to the rate at which the particular fuel, which has to be *chemically* oxidised (C + O = CO……CO + O = CO2), should be supplied; the application of the correct amount of *heated air* for supporting combustion *at the most useful point;* or, in other words, an enquiry into the combination of conditions whereby the solid particles of combustible, or gas, may be completely oxidised without being adversely affected or influenced by the deadening effects of CO2.

A partial analogy may here be made with that which is known as the "slow combustion" grate, where the deadening effect of the CO2 does not influence the fire; where the cold air is not passed through the fire; and greater heat is radiated, with, at the same time, a lower consumption of fuel. This is, as stated, only a partial analogy as far as the general proposals made by the author are concerned, because there are many other matters which will be found by experiment to adversely affect the economic combustion of coal in boilers, with the present arrangements. The object of a boiler plant should be to give out the best results arising from the proper combustion of coal. The production of 15 or 16 per cent. of CO2—in itself quite harmless as an ideal—shows that combustion has been carried to a certain point, but it does not prove that the best and most economical results have been arrived at, or have been obtained in the boiler. It is, of course, obvious that the heating of any cold air, which is not necessary for combustion purposes in the boiler, is an absolute waste. The best heating results may be obtained with one class of fuel when combustion takes place at one particular rate and general condition; and other results altogether disappointing will be obtained under other conditions. The fact is, that it must be admitted that coal is usually treated in a manner far too rough and irregular to get the best results from it.

(To be continued.)

---

* Paper read before S.A.I. of E., Jan. 13, 1912.

Pniel Diamonds.

But little has been heard recently of the Pniel Diamond Mining Company, Ltd., which, it may be recalled, was floated five years ago with a capital of £300,000. There has, however, of late been a distinct change in the affairs of this concern, mainly owing to the energy and enterprise of Mr. B. Aaron, managing director of the company. Mr. Aaron states that during the past few months he has discovered, and partially opened up, five distinct prospects on the property. He expects to have a washing gear at work on the property in March next.

MINING EXAMINATIONS.

Private individual tuition for Mine Managers', Mine Captains', Mine Surveyors', Mechanical Engineers' and Enginedrivers' Examinations, Practical Mathematics and Electrotechnics. Correspondence lessons where personal tuition is impossible.—E. J. MOYNIHAN, Consulting Engineer, 10, Anglo-Austrian Buildings, Box 2061, Johannesburg.

Rhodesian Section.

LATEST CHARTERLAND MINING NEWS.

The Shamva's Equipment—Falcon Mines: Some Remarkable Assertions—A Rhodesian Testing Plant—The Eldorado's Dividends—Amalgamated Props.—Share Market Depreciation.

It is of much interest to learn that at the great low-grade Shamva mine, in the Abercorn district, preparations already are being made for the commencement of crushing operations. We learn from Rhodesia that the battery excavations for the first section of the mill are now practically finished. In the first instance the mill will contain from eighty to one hundred stamps, and these will be supplemented by tube mills. Of course the erection of a much larger installation has been kept in view for the future, for, having regard to the large tonnage already blocked out and the still larger tonnage which may be looked upon as "probable," the Shamva will be capable of supporting a substantially larger crushing equipment than any other mine in Rhodesia. Another feature of interest in connection with the Shamva equipment is the fact that the mill will be operated by electricity, and will thus be the first really large installation to be driven by this power in Charterland. The power plant will be situated at some little distance from the battery, and will be situated at a point where coal can be discharged direct from the proposed railway terminus. Evidently the date when crushing operations will be commenced is in no little degree dependent on the progress attained in connection with construction of the railway. The line has at present reached the Jumbo mine, and for the time being work has been suspended at this point, and it will certainly be another twelve or fifteen months before the railway reaches the Shamva.

* * * *

Certain curious statements are being made concerning the Falcon Mines. The ore reserves are officially stated to be 979,000 tons; but as against this a band of critics, who are not apparently altogether lacking in knowledge of the mine, state emphatically that this tonnage is based on assumption, and that the actual ore reserves of the company amount to only 555,000 tons. We have not been privileged to see the articles of association of the company, but it is stated that in them it is stipulated "no shareholder shall be entitled to require discovery of or information respecting any details of the company's operations." We have never heard of a similar reservation in a company's articles of association, and, if the statement given above is correct, as we have good reason for believing it to be, we are more than surprised to find that a concern with which reputable firms and persons are connected, as is the case with the Falcon, should make such an absurd and vicious stipulation.

* * * *

On more than one occasion the *S.A. Mining Journal* has pointed out that Rhodesian gold ores, unlike the auriferous conglomerates of the Witwatersrand, are by no means "plain sailing propositions" from a metallurgical point of view, that a more free interchange of metallurgical opinion and experience in Matabeleland and Mashonaland is sadly needed, and that some central testing plant would be of inestimable value to Rhodesian mines. A step in the right direction has apparently been taken by the flotation of a concern styled the Rhodesian Refractory Minerals Process, Ltd. A plant is being erected by this company adjacent to the New Found Out Mine at Gadzema, and it is expected to have this experimental installation completed by the end of the current month. Besides having the necessary machinery installed for the testing and treatment of refractory ores by the "Martin process," the plant is equipped with a complete concentrating unit, consisting of Buss coarse and fine concentrators, Luhrig vanner and convex slime table. A cyanide plant is also being added, and the company will be prepared to receive parcels of ore up to 100 tons weight, to experiment on same, and issue full reports and suggestions as to the most suitable treatment. The erection of this plant marks an important event in the annals of Rhodesian mining. It has been for long felt that such an installation was needed. During the last two or three years more than one Rhodesian concern has had to go to very considerable expense in sending to Europe ores for metallurgical investigation. The erection of a modern plant in the country should obviate the necessity for this in the future. It is also of first-rate importance to have an experimental plant on the spot, where a full knowledge of local conditions is of first-rate importance.

* * * *

The Eldorado Company has just declared a dividend of three shillings per share, making a total of six shillings or thirty per cent. for last year. The company has now paid out 105 per cent. in dividends, and since its first declaration in December, 1908, it has been a steady and consistent distributor of profits. In announcing this dividend, the directors state that the profits to date permit of a larger distribution, but owing to a probable change in the controlling interest in the company they prefer not to depart from the lines hitherto followed.

* * * *

The joint secretaries of the Amalgamated Properties of Rhodesia have issued a circular to the shareholders reading as follows:—"We have to inform you that owing to a delay in the preparation and adjustment of the accounts (caused in a great measure by the advent of new directors to your board), and to the fact that Dr. Sauer, your late chairman and managing director, was recently forced to resign these positions in consequence of a very serious breakdown of his health, and in view of the strong desire he has expressed, in consequence of recent criticism, to be afforded an opportunity of meeting the shareholders, it has been decided to hold a general meeting of the company on Thursday, January 25, 1912, at 12 o'clock noon, at Salisbury House, London Wall, London, E.C., by which date Dr. Sauer's medical advisers say he will be able to be present. The formal notice of meeting, together with the report and duly audited accounts, will be in your hands at least ten days before that date. At the forthcoming meeting a resolution will be submitted to the shareholders for the purpose of deleting from the articles of association the power thereby conferred upon the directors to increase the capital of the company without the approval of the shareholders."

* * * *

In a recent issue we referred to the depreciation in certain Rhodesian shares that took place last year. Even since the middle of the year the fall in the best class of Rhodesian shares has been remarkable. In Chartereds, for instance, there has been depreciation amounting to £1,309,158, whilst Tanganyikas have dropped to the extent of £1,702,196. In Globe and Phœnix stock there has been a fall of £700,000, and in Amalgamated Props. the decline has amounted to £510,315. Shamvas have fallen £406,250, Eldorados £281,250, and Giants £196,567.

THE YEAR IN RHODESIA.

A Review of the Salient Features of 1911.

III.—THE LEADING GROUPS—THE GOLD FIELDS—R.E.D. AMALGAMATION—GLOBE AND PHŒNIX RETURNS.

After a brief review of outstanding commercial and technical features of the year in so far as the industry as a whole is concerned, some examination of the affairs of individual concerns is called for. Each of the important groups controlling Rhodesian mining has witnessed important events and marked changes in business interests during the year recently brought to a close. The Consolidated Gold Fields of South Africa, Ltd., for instance, has seen the development of large and important subsidiary concerns in Mashonaland—the Shamva, Union Jack and Golden Kopje for example—progress on very satisfactory lines. The Rhodesia Exploration and Development Company has improved the returns and prospects of subsidiary companies. The London and Rhodesian Mining and Land Company's Cam and Motor property has been energetically exploited, and was estimated to possess at the end of September last ore reserves of a total gross value of £1,653,000. The Rhodesian Gold Mining and Investment Company has brought the Lonely mine to a scale of crushing and production which speaks well for the development and equipment of the property. Moreover, ore reserves amounting to 120,000 tons and assaying over one ounce per ton have been blocked out.

Farrar—Anglo-French, Willoughby's, etc.

Reconstruction of the Penhalonga and Rezende mines and the adoption of a working agreement between the two companies has occupied the attention of the Farrar—Anglo-French group in Rhodesia. Willoughby's Consolidated Company has floated the Eileen Allanah Company, and has been actively engaged in prospecting the Connemara and other blocks of claims, and also in developing the disappointing Surprise mine. The Bechuanaland Exploration Company's interests in Southern Rhodesia have always centred chiefly in the Selukwe district, where the low-grade Wanderer Camperdown concern has secured somewhat better returns. In regard to the East Gwanda mines no change for the better is to be recorded. The Gwanda district as a whole appears, as a matter of fact, to be under pretty much of a cloud at present. Profits of the Farvic, under Rhodesia, Ltd., control, are but a fraction of what they were some little while ago, and the Bucks Reef, under Neumann control, latterly has been working at a loss. The United Rhodesia Gold Fields Company are largely interested in the Jumbo mine, Mazoe district, and here, although better developments have recently been reported, the ore reserves exhibit a decline on the previous year's total. The Mashonaland Agency's interest in the Battlefields mine has been much of a disappointment in so far as 1911 was concerned, the development having been very discouraging.

The "Great" Amalgamation.

Of course the two first named corporations, Consolidated Gold Fields of South Africa, Ltd., and Rhodesia Exploration and Development Company, Ltd., claim chief attention in a review of the year. The amalgamation of the Gold Fields Rhodesian Company and the Rhodesia Exploration and Development Company will unite under one management, the majority of the largest mines of the country. Amongst the concerns which will be brought under the management of the amalgamation, which has already been approved of by the Consolidated Gold Fields Rhodesian Company are the Eldorado, Shamva, Bell Reef, Union Jack, Golden Kopje, Gaika, Selukwe Columbia, etc. This union of the two chief companies operating in Southern Rhodesia will, when brought to its full consummation, control one of the most important gold mining organisations in Africa. It is rather curious to note that whilst certain Rhodesian newspapers commend the formation of the British South Africa Company's Mines Department, assert that there is plenty of room for all in Rhodesia, and point out that the entry of this company into the field of Rhodesian mining cannot depreciate the price of gold, every kind of argument conceivable (including those brought forward to support the Chartered Company's scheme) has been brought to bear against the amalgamation of the Consolidated Gold Fields and the Rhodesia Exploration and Development Company.

Other Amalgamations Pending.

But whatever may be argued against the consolidation of Rhodesian mining ventures, the Consolidated Gold Fields of South Africa-R.E.D. union is going through, and it is likely that in the near future other consolidation projects will be heard of. Although the majority of Charterland mines are spread over a vast extent of country, there are localities where several important ventures are clustered together—as for instance on the Eiffel Flats—and in cases of this kind economies in administration would no doubt result from a consolidation of interests. It is at any rate pretty well certain that details of other amalgamations will be announced in the very near future.

Independent Companies.

To turn for a moment to independent companies or concerns not directly controlled and administered by the large groups, the continued success of the Globe and Phœnix Company has been the outstanding feature. Although operating at a far greater depth than any other mine in the country, this concern has continued to distribute large dividends, and is producing gold at the rate of about £445,000 per annum. The ore reserves of the company have a gross estimated value of £1,356,238.

(To be continued.)

Rhodesia Asbestos.

The report of the Rhodesia Asbestos Company, Ltd., for the year ended 31st March last, states that from the general manager's report in regard to the working of the property, dated 1st instant, it will be seen that the closing of the existing roads to the railway, in consequence of the sudden restrictions imposed by the British South Africa Company on account of the reported outbreak of East Coast fever, has completely isolated the property so far as economical transport is concerned. During the year under review the gross sales of asbestos amounted to £5,605. Contracts for the supply of asbestos had been arranged previous to the closing of the roads coming to the directors' knowledge, and they have to express their great disappointment at this unforseen situation having arisen at a time when the company's position appeared to be successfully assured, and it is now a matter for serious consideration whether it is possible for the company to continue to produce asbestos on a sufficiently large scale to be profitable until a railway or other sufficient and regular means of transport is available. The erection of the plant for the treatment of the rock was completed in January last, and it has proved to be quite efficient and capable of treating satisfactorily 90 to 100 tons a month.

Charter Trust and Agency.

The Charter Trust and Agency, Ltd., has declared a net profit of £63,361 for the year ended November 30, 1911, and a dividend of 7½ per cent., while £7,667 has been carried forward.

TANGANYIKA CONCESSIONS ORE RESERVES.

Some Enormous Discrepancies—Estimates of Experts Contrasted—Why Mr. Frecheville's Report Should be Published.

There are certain fixed methods of estimating the ore reserves (or the "ore proved") in a mine which are well known to mining engineers and surveyors all the world over. Three different engineers or six or sixty engineers for that matter in reporting on an ore deposit where development work has exposed a certain tonnage, in estimating this tonnage and the metallic contents should arrive at calculations which tally with one another very closely. These statements must be self-evident to all technical men, they admit of no contradiction in so far as "proved ore" or "ore reserves" are concerned. It is therefore remarkable that in the figures recently published by the Tanganyika Concessions Company there should be such very large discrepancies between the estimates of ore proved advanced by Messrs. Frecheville, Gibb and Atherton.

The Tonnage at Kambove.

To deal first of all with the Kambove mine, which is stated to be the best of the Katanga copper properties, Mr. Frecheville's estimate is given at 1,800,000 tons of ore, of 12 per cent. value; Mr. Atherton's at 2,500,000 tons of 14 per cent.; and Mr. Alan Gibb's at 3,000,000 tons of 12 per cent. To reduce this to metallic estimates, Mr. Frecheville's computations give a total of 215,000 tons of copper, Mr. Atherton's 350,000, and Mr. Gibb's 360,000. Whilst Messrs. Frecheville and Gibb both estimate the value at 12 per cent. (Mr. Atherton's estimate is 2 per cent. higher), and whilst there is a difference of not more than 10,000 tons of copper between Messrs. Atherton's and Gibb's figures, the disparities in the estimates generally are stupendous. For instance, Mr. Atherton says there are 700,000 more tons of ore than Mr. Frecheville calculates; in other words, Mr. Atherton arrives at a tonnage over 38 per cent. in excess of Mr. Frecheville's estimate. There is an even greater difference between Mr. Gibb's estimate of tons of ore and Mr. Frecheville's. Mr. Gibb's calculations exceed those of Mr. Frecheville by 1,200,000 tons, or by 66 per cent.

Star of the Congo Reserves.

Remarkable as are these differences in connection with Kambove, they are greatly exceeded in the case of the Star of the Congo mine, near Elisabethville, and from which large quantities are now being drawn for the Lubumbashi smelter. Mr. Frecheville reports 435,000 tons of "14 and 9 per cent." value—whereas Mr. Atherton calculates on 1,500,000 tons of 11 per cent. ore, and Mr. Gibb finds 1,200,000 tons of "15 and 6 per cent." value. Mr. Atherton's calculations as to "ore proved" give therefore nearly *three and a half times* as much ore as Mr. Frecheville's, whilst Mr. Gibb's estimate is two and three-quarter times as much as Mr. Frecheville's. Translated into copper contents and pounds sterling with copper at £62 per ton, the estimates for the Kambove and Star of the Congo mines, according to the three engineers named, stand as under:—

Authority.	Kambove.		Star of the Congo.		The Two Mines.	
	Tons Copper.	£	Tons Copper.	£	Tons Copper.	£
Frecheville...	215,000	13,330,000	50,000	3,100,000	265,000	16.430,000
Atherton ...	350,000	21,700,000	165,000	10,230,000	515,000	31,930,000
Gibb ...	360,000	22,320,000	106,000	6,572,000	466,000	28,892,000

The difference between the estimates of Messrs. Frecheville and Atherton amounts therefore to no less than £15,500,000 and between the calculations of Messrs. Frecheville and Gibb to £12,462,000! It is explained: "These figures refer only to ore found to exist by the shafts and underground work that has been done." The true meaning of this paragraph is somewhat doubtful, but it presumably has reference to the various mineralised kopjes lying within the area of the concessions. Whatever it may mean, however, the Tanganyika Concessions management are scarcely entitled to attempt new definitions for "ore proved." It is clearly stated that the estimates of Messrs. Frecheville, Atherton and Gibb, between which such remarkable differences are noticeable, refer to ore proved. The ambiguous term "ore in sight," which has been barred by the Institution of Mining and Metallurgy in London, is not used here, the statement "ore proved" leaves no room for misconception and it is a remarkable thing that there should be such large variances in the three estimates.

Mr. Frecheville is a well-known mining engineer, a member of the Council of the Institution of Mining and Metallurgy. He examined the properties of Tanganyika Concessions Company in 1907, and his report has never yet been published. Mr. Alan Gibb is the chief engineer of the Tanganyika Concessions Company in the Katanga. We must confess our ignorance of the fact that Mr. Atherton had visited and reported on the Tanganyika mines until the estimates given above were published in connection with the recent Tanganyika meeting.

Questions for the Directors.

One may pertinently enquire what dates do the reports of these three gentlemen bear? Of course differences in the amounts of work carried out at different dates may in some degree explain the discrepancies. A further query we would make is why should Mr. Atherton's estimates of ore proved in mines other than the Kambove and the Star of the Congo be stated, and the calculations of Messrs. Frecheville and Gibb be excluded? At any rate why are not Mr. Frecheville's estimates of ore in the Fumgurume, Kwatabala, Likase, Kabolela, Dikurwe, Musonoi, Kolwezi and Kakanda mines published side by side with Mr. Atherton's? Presumably Mr. Alan Gibb examined and reported on these mines also. In so far as Mr. Frecheville is concerned, we know for a certainty that the directors of the Tanganyika Concessions Company are in possession of estimates of ore in the mines above named and made by him. Having gone so far as to whet the public appetite for more knowledge, we think the Tanganyika Concessions directors would be well advised in publishing Mr. Frecheville's report *in toto*. The reports of Messrs. Gibb and Atherton might be published simultaneously and comment and explanation of the different positions prevailing now and at the time when the reports were made should supplement these.

Belingwe Gold Reefs.

The report of the Belingwe Gold Reefs, Ltd., covers the period from 18th December, 1910, to 30th November, 1911. At the last annual meeting it was stated that the manager would shortly be leaving for Rhodesia for the purpose of examining the various claims then owned, and the 80 additional claims that the company had the option to purchase. The reports received were considered entirely satisfactory, and the purchase was completed, the payment being in fully paid shares. The company now owns 150 claims in Rhodesia, together with a freehold farm 6,250 acres in extent. The manager reports as follows under date 14th November: "The property of your company has now been increased to 150 claims, and during the past twelve months prospecting operations have been conducted with fairly satisfactory results. These operations will be continued during the coming year, and I fully expect to be able shortly to inform you that two of the blocks of claims will have passed the prospecting stage, and be ready to open up as mining propositions." The claims upon which he is now working are developing in a very satisfactory manner, but it is considered advisable to delay issuing a full report as to the values until the work is more advanced.

Our Twenty-First Birthday.

Unique Advertising Opportunities.

This year the "SOUTH AFRICAN MINING JOURNAL" celebrates its Twenty-First Birthday.

To mark the occasion a SPECIAL ANNIVERSARY ISSUE which will deal with every conceivable aspect of Mining, Metallurgy, Finance, Engineering, Railways, Harbours and Subsidiary Industries throughout the Sub-continent, will be issued in May next.

The Leading Mining and Financial Men of Europe, Africa and America will contribute to this Special Number, which will Establish a RECORD in South African Illustrated Journalism.

WORLD-WIDE CIRCULATION IS ASSURED.

Do You Wish to Push Your Business?

Apply at once for Advertisement Rates to the

Manager, "S.A. Mining Journal,"

Box 418. **Telephone 913.**

119-126, Exploration Buildings, Johannesburg.

THE ADVERTISING SPACE IS LIMITED AND EARLY APPLICATION IS ESSENTIAL.

Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

Rand Company Meetings.

To the Editor, *South African Mining Journal.*

Sir,—I read with much interest the leading article contained in your issue of January 6th, and the letters appearing in the January 13th issue apropos of holding in London the annual meetings of Rand Companies. The provisions of the English Companies Acts relating to foreign companies having offices in England I am wholly ignorant of, and I shall, therefore, confine myself to matters outside of the legal aspect of the suggestions. After all, these are by far the most important, for, whilst few of us are concerned with Companies Acts, all of us who have any abiding interest in this country must resent, and resent most keenly, the making of Witwatersrand Gold Mining more of an absentee industry than it is at present.

The Transvaal, which produces one-third of the gold output of the globe, should be one of the richest States in the world, and Johannesburg should be one of the wealthiest cities. People in England still speak of Johannesburg as the Golden City. One can only pity their ignorance. Those of us who have made our home here know full well that although our gold mines are producing between thirty and forty millions per annum, we have to live on the crumbs that fall from the great tables, whereon the real loaves of the industry are devoured. Nearly all those tables are in Park Lane or the wealthy suburbs of Paris and Berlin. All the dividends drift thither, and of the money expended on machinery and plant erected in this country a large portion goes to the same quarters.

Cornish and North of England villages get a great percentage of the amounts of money paid out in white wages. Portuguese East Africa claims a great deal of the vast sums of money paid for native labour. And now, to further deplete this country of its rightful share in the industry, it seems that an agitation is afoot to hold annual meetings in London. At the outset, it seems, duplicate meetings are to be held in South Africa also, but surely this will largely complicate Rand administration, and I see in this the thin end of the wedge; eventually the whole control will be shifted to Europe, head offices will be located in "the City," and even the few poor crumbs that remain to us at present will be swallowed elsewhere. If such a policy is persisted in, surely the Government will recognise in many of the large financial institutions now operating in the Transvaal—and each year depleting the country of its wealth—mere foreign institutions, and will bring into effect new taxation machinery. Such a course would be only right and just, for South Africa cannot afford to have its mineral wealth transported without receiving some payment in return. If the spending powers of directors and head office staffs are to be removed to London or Paris or Berlin, the people of this country are entitled to a heavy compensation.

Now, Sir, not only am I a permanent resident of this town, but I am also interested in not a few Witwatersrand mines, and I have just as much right to have a say in their control and management as the European shareholders. Control of Witwatersrand mining from London will certainly not tend to higher efficiency, better management, larger outputs, or more dividends. The sorry affair of the East Rand Proprietary Mines is said to have started this agitation for meetings in Europe and control from London. To my mind, the E.R.P.M. debacle urges the necessity for more vigorous local control, and proves that control from Europe would be disastrous in the extreme.

If directors in Johannesburg, only a few miles from the property, could not govern the E.R.P.M.'s affairs, how can we expect directors 6,000 miles away to efficiently direct affairs? Rhodesian mines are directed from London, and anyone who knows much about that country will tell you that the system has proved far from effective in that country. In any case, I reiterate my opinion (which is shared with many other representative South African citizens) if the gold mining companies of the Rand become more of foreign institutions than they are at present the Union Government should compensate the country by vigorously taxing their produce.—I am, Sir, yours etc.,

Hospital Hill, Johannesburg, N.L.D.
January 18, 1912.

[The question is referred to elsewhere in this issue.—Ed., *S.A.M.J.*]

The Geology of the Witwatersrand.

To the Editor, *South African Mining Journal.*

Sir,—In reply to your foot-note to my letter in your last issue, I will, as you suggest, go into more detail and give some evidence in support of my facts, although it is contrary to my own interest so to do, as this special knowledge of our Witwatersrand geological age has cost me a small fortune, and years of careful study. The section from Government Reef series at Witpoortje, down the Kloof to the Hospital Hill shales, and beyond, is what any picnicker, who knows the difference between sandstones and shales, can read as he runs; but what of the southern section between the Government Reef series and Main Reef series—which contains Du Preez, Van Ryn, Blue Sky, etc.? Nature has cut no Kloof there to oblige the observer, and experience alone is required to make up the section. Main Reef series is not where Dr. Mellor places it—on Grey's Mynpacht—but at no less a distance than the Saxon G.M. Co., which is about three or four miles away, in a straight line from his northern section, as published in your issue of the 6th. What you, sir, or any of your readers will find on Grey's Mynpacht, if they care to investigate, is unconformable Black Reef series, which is traceable on to the Randfontein Mynpacht, and a very good series too! The Government Reef series, which Dr. Mellor appears to make his principal pointer, crosses the railway a little to the east of Witpoortje station, and crosses it again just below the level crossing, at the bend of the line—showing its utter contempt for the supposed "Witpoortje break," which is part of the creed of the geologists—and keeps within a stone's throw, to the south, of the "old top road" all the way up to Mrs. Hayes' store, north of Florida, where it crosses it, and traverses the farm Weltevreden (Barnato's), where Mr. Ghericke, the pioneer of old Du Preez, trenched it here and there, many years ago, looking out for the western extension of his lucky find—where it was not! From this point, Government Reef series trends through on to the ridge overlooking Auckland Park, passes under the cemetery at Braamfontein, and eventually—after the upheaval perhaps—lost a portion of itself in the Bezuidenhout chasm or dyke, which Dr. Mellor has correctly marked on his map in yours of the 17th. Du Preez, its southern neighbour, also took a dive into the igneous mud, somewhere about the "Swimming Baths," and appeared again north of the Geldenhuis Estate, on the unproclaimed portion, "waiting-on-the-hill-so-long" for some microbe to recognise it, after all these 26 years. Its eastern extension, with its Stable reefs, Nature threw north to spoof the "experts." The western extension of Du Preez can be seen on Langlaagte Estate; it trends north of Maraisburg, north of Florida, and forms the northern series to Mr. Hutt's claims, between Florida and Roodepoort (the very same that Dr. Mellor, in his stratigraphy, terms Government Reef series!), it goes on and on, into the Princess' top mynpacht, honours Sir Abe Bailey's claims, on Witpoortje, with a visit, and then passes into "Prinsloo's Reitvlei," which has been, and ever will be, the "Government

Reserve " for the very best of our bankets, which lead on to Klerksdorp—covered, of course, with Black Reef series here and there, but what matter! The Van Ryn and Blue Sky series come next in order to Main Reef series, and are equally traceable, but if geologists cannot see the simple fact that " Langerman's Kop " is Van Ryn series, and that Jeppes series (as Dr. Mellor terms it) is Blue Sky series, then I shall be only wasting your valuable space by expatiating, so rather let the dumb things speak for themselves—" Irish tho' it be." I am not writing this in any carping spirit, but after 25 years on the Rand, and having made scores of reports for individuals north of Main Reef series, and having myself paid the Government a few thousand pounds for claim licences there, as others are doing to-day, I cannot allow the Geological Survey Department to wipe out the whole area under review as containing no payable series, when I say, and will say again, that the Blue Sky (or E.R.P.M.), Van Ryn, Du Preez series, etc., lie north, and are most valuable assets to the Government and the country generally.—Yours, etc.,

SCOTT ALEXANDER,
" Rand Stratigraphist."

Johannesburg, Jan. 16.

[The Geological Survey have no concern with the payability or otherwise of the various conglomerate beds mapped out and correlated by them.—Ed., *S.A.M.J.*]

" London " Diamonds-

A REPLY TO CRITICS.

To the Editor, *South African Mining Journal.*

Sir,—No one takes trouble to worry round and damn a useless proposition. It isn't necessary. For the last month, however, regular reports have been brought to me regarding false statements which have been steadily and laboriously circulated at Bloemhof, Mooifontein, Johannesbur, and elsewhere with regard to " London." The following are the false statements, which in some respects are almost too ridiculous to notice:—1. That all the diamonds found on " London " are " tame " stones—that is, were " planted." 2. That no claims are available for the public, unless they pay the company 30s. each. 3. That the best ground (you will notice they admit there is some good ground) has been kept out by the company for itself. 4. That there is no water on the farm. 5. The statement in the " Leader " of Monday that " no stores or business places have yet been built there." 6. That no stones are now being found, practically every wash being a " blank." From beginning to end this is a tissue of untruths, and it won't take anyone with a grain of commonsense half a minute to form his own conclusion as to the parties who have used so much ingenuity, and gone to so much trouble, to circulate this false information. It is obvious that the trouble would not have been taken except for the fear that the success of " London " as a diamond digging would hurt their own pockets. And this fear would not have been born in their heroic breasts unless they were sure that " London " was good—as, indeed, it is; the pick of the district. I now wish to reply to 1 to 6 in detail:—

1. It is hardly necessary for me to say that this is a silly libel. Yet there are people who will believe the most extraordinary fables.

2 is untrue. The owners are entitled to three-tenths of the proclaimed area, provided licence monies are paid to the Government before the date of proclamation. At considerable expense, and with the utmost care, the company selected its three-tenths, and paid licences on an area of about 6,200 small claims. These are the claims sold at 30s., and the services rendered to the buyers are well worth the money, as they include the cost of a surveyor properly to beacon off their claim and lay out roads through the claims, and the services of the company's staff to label the claim with the name of its owner—no small task. In addition to these 6,000 claims, 14,000 claims were thrown open for public pegging, for which, as usual, the diggers paid nothing, except the Government licence.

3. No ground has been specially kept out by the company. The whole farm will be thrown open bit by bit as the demand for claims arises, subject only to the right to prospect the farm for a mine, granted to Sir Thomas Cullinan.

4. There is abundance of water. The charge made by the contractor is 3d. per barrel delivered into diggers' barrels at the well-head. He can do his own carting, get anyone he likes to do it for him, or get the contractor to do it for him at the rate of 9d. for the first mile, or 1s. 3d. for two miles; or he can sink a well and get his water for nothing.

5. This statement is also absolutely incorrect. Trading rights amounting to £4,800 were sold by auction on December 19, and already two general stores, one butcher's shop, one restaurant and tea-room, and various other businesses have been established, and when I visited the farm on Sunday last, not only did I fail to find one dissatisfied digger, but, notwithstanding the high prices paid, not one dissatisfied trader; and, on my return to Johannesburg on Monday, I had the pleasure of selling the hotel rights to Mr. J. Bowles, of Durban, after Mr. Bowles had previously visited the farm with other well-known licensed victuallers and satisfied himself of the genuineness of the proposition.

6. It is a well-known fact that the old digger won't publish his finds, for obvious reasons. Nevertheless, in the few hours at my disposal, I got into conversation with a number of them, and the following figures were given to me publicly, and I challenge Mooifontein or any other diggings to equal them:—

	Loads washed.	Carats.	Value.
Retief	35	3	£38
James	216	64¾	363
T. J. Roos	80	13¾	80
P. W. Roos	25	6½	35
Caspar	—	58½	*
Caspar	120	9½	75
Fourie	**	22	176
Fourie	—	1¾	say 8
Williams	—	23½	*
Kestern	—	2½	*
Robertson	50	3½	12
Bantjes	30	8¾	71
Davis	25	5¾	say 34
	581		892

* Value not ascertained. ** Picked up.

This gives an average of £1 10s. 9d. per load of 16 cubic feet washed. I should like to know whether any other diamond venture can show such an average. It must be borne in mind that but a few weeks have elapsed, and the majority of the diggers are just loosening the ground, and many of them are handicapped for want of boys, who, however, are now coming in more freely, and by lack of machinery, which the company has arranged to provide on hire.—I am, etc.,

FRANK T. RICHARDS.

Johannesburg, January 16.

Anti-Malarial Remedy.

To the Editor, *South African Mining Journal.*

Sir,—Some few months ago there appeared in your columns a report on a medicine which had been introduced by the Anti-Malarial Association and which was said to be most effective either as a cure for or preventive of malaria. Can you kindly inform me where I can get further information upon this matter?—Yours, etc.,

M. MACKENZIE.

Greytown, Natal,
January 10, 1912.

[To the best of our recollection, Messrs. Lennon, Limited, are the agents for the preparation. We would suggest that enquiries be made of the Transvaal Medical Council. The name of the article was Maningo.—Ed., *S.A.M.J.*]

A HOLIDAY PLACE FOR JADED RANDITES.

Where Mining Men May Revel in the Joys of Mountaineering—A Visit to "The Roof of Africa"—The Call of the Drakensberg and the Magic of Mont aux Sources.

For the fagged and weary brainworker of the Rand there are two voices ever calling him to rest, repose and change. In Wordsworth's fanciful imagery, one is the Voice of the Sea, and one—a mighty one—is of the Mountains. For far too long have Randites ignored the proximity of the Drakensberg, where all the pleasures of alpine climbing and impressive world views are combined and made accessible in ease and comfort. Through the enterprise of Mr. Tom Casement, and not too lavish assistance of the South African Railways, it is now possible for the Randite to spend a week in the healthful sport and pastime of mountaineering amid the marvellous peaks of the Drakensberg, with just enough of the discomforts of roughing it to make the experience really enjoyable. The Drakensberg range—particularly that portion known as the Mont aux Sources group—makes its challenge to all lovers of nature in her grandest and most sublime moods. Tourists and mountaineers should no longer be satisfied with repeating the ascents of the well-trodden peaks of the Continent or Canada, now that the beauties of the Drakensberg are making so emphatic a claim to attention. Here the geologist, the botanist and the naturalist can find in every direction opportunities for original research of the most valuable character; and the mountaineer and sportsman can revel in regions untrodden from the beginning of time. The health and pleasure seeker can here hardly fail to obtain new energy and new inspiration, while the artist may find in the Drakensberg a new world to conquer and make his own.

Tugela Gorge, near Tunnel.

The Drakensberg Range.

Much has been written of the approaches to the Drakensberg from the Natal side, describing the recesses from Mont aux Sources to Giant's Castle, but tourists have not been made sufficiently familiar with the much more accessible route to the Mont aux Sources group via the Orange Free State, which enables them to reach with comparative ease, and at a minimum of expense, the very summits of the peaks of that part of the 'Berg.

The Drakensberg range extends from the Limpopo River in the North-Eastern Transvaal almost to the coast of Cape Province in the south, a distance of approximately 1,500 miles. In this great range there are many magnificent and awe-inspiring scenes to stir the imagination and delight the eye, but of them all, while the Cathkin Peak (Champagne Castle) section may claim to be the most impressive for boldness of outline and splendour of aspect, the scenery in the vicinity of Mont aux Sources is equal, if not superior, in variety, in delicacy, in compactness, and in grandeur to that found in any other part of the Drakensberg range.

Mont aux Sources From Below.

To appreciate the majestic proportions of mountain scenery, even approximately to gauge their altitudes, the tourist must approach from below. This is supremely the case with the Mont aux Sources group. Viewed from the Orange Free State and Basutoland side, they do not present the most imposing appearance owing to the elevated plateau-like character of the country. From the Natal side, however, they present magnificent precipitous faces. The Mont aux Sources has no actual peak, but to the north of the point at which the waters of the Tugela Waterfall flow over the edge of its cliffs, an isolated buttress stands out in bold relief against the sky, as immediately to the north of this mountain the height of the range drops considerably. This sentinel peak presents a roughly triangular form when viewed from the Upper Tugela Valley, gradually tapering to the summit, which is flat and of small extent. From a distance of twenty miles its sides present clean precipitous faces, while the angular edge between them is irregularly sloping, and appears to be sharp and razor-like. Although apparently so inaccessible from the Natal side (except to the experienced climber), the ascent from the Orange Free State is negotiated with comparatively little difficulty and with perfect safety; but then the view is from the mountain and not to it.

Features of Mont aux Sources.

The immediate neighbourhood of the Tugela Falls may be described as showing the typical scenery and geological structure of the Drakensberg. This district is more accessible by wagon than any of the other localities, and the scenery is, on the whole, more beautiful. Words fail to furnish adequate expression of the pictures that may be seen from any point of the bed of the Tugela as the Gorge is approached, or as the visitor skirts the hills which run out in grand and lofty spurs, broken here and there by perpendicular cliffs, many hundred feet deep, clothed with subtropical plants and shrubs, with beautiful creepers climbing among the projecting rocks, or hanging in festoons whose crimson and yellow pods make delicious contrast with the rich green decoration around. Tree-ferns also ubiquitously raise their stately crowns above the undergrowth.

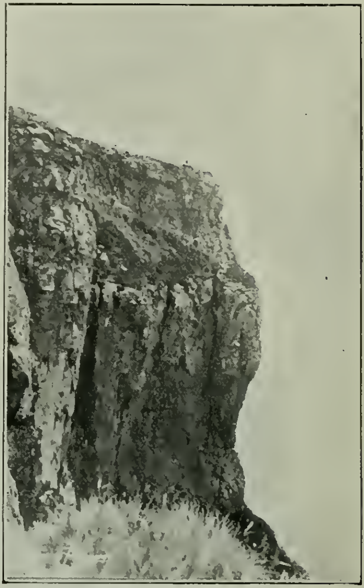
THE SOURCE OF THE TUGELA.

At the feet of the Tugela Falls the scenery is regarded by authorities as resembling, in some respects, the Dolomites not far from Innichen in the Pusterthal, below the Drei Schusberspitze. The peaks, buttresses, pinnacles, cliffs, ruined towers and spires, and the rich colouring of the rocks are grand beyond description. The face of the Mont aux Sources is really concave, and the Tugela Falls are seen almost in the centre of the cliff face. The many projections and ridges show up best before sunset or sunrise, but are lost in the full glare of daylight. The river cañon that has to be traversed to reach the foot of the falls is most interesting and beautiful, and probably one of the unique things in South African scenery. There are places here, cold and damp, upon which the sun never shines, while, over 2,000 feet above, the majestic peaks hold in suspension films of sunlit cloud. The top of Mont aux Sources is characterised by rocky hills and desolate valleys gently sloping into Basutoland, and is cut off by high hills and ridges. It is, in fact, a volcanic plateau, curved into a series of hills and valleys towards Basutoland, all the peaks, cliffs and features being on the edge overlooking Natal.

TUGELA GORGE.

THE GREAT CAÑON—THE FALLS AND GORGE.

It is questionable if there is anything in Europe resembling the five miles of cañon below the Tugela Falls. In places it is not more than forty feet wide, and the only route is the river-bed itself, up which heavy walking is unavoidable to reach the foot of the lower fall. The rise is 1,200 feet in four miles from the mouth of the Gorge to the foot of the lowest falls. One authority gives the height of the main Tugela Fall with its three steps at 2,050 feet. The Tunnel or Narrow Gorge, about 150 feet in length, through which the river flows like water in a pipe, at one spot divides the lower part of the cañon into two. It is not quite dark inside, as the river reflects the light well into it. Of course one has to go through the water, which is one or two feet deep. All the mountain streams are crystal clear; even a freshet after a storm does not make them the least muddy. Some of the pot-holes are large and deep. In winter the frozen waterfalls, 30 or 40 feet high, show a charming play of rainbow colours in the sunlight. In sheltered spots on the top, snow lies during most of the winter, and not infrequently falls in the summer. In spring the flowers are very beautiful, and occur in great profusion. Excursions covering three days may be arranged from "Rydal Mount" to Tugela Gorge, and these are fully described in an excellent little pamphlet issued by the S.A.R. Publicity Department, from which we have borrowed largely in this article.



TOP OF MONT AUX SOURCES LOOKING DOWN INTO NATAL. TUGELA RUNS 3,000 FEET BELOW.

FROM THE CITIES TO THE HILLS.

It is easy and absurdly cheap to make mountaineering excursions to the top of Mont aux Sources via the Orange Free State. Leaving Johannesburg, Pretoria, Bloemfontein, Durban or Maritzburg by the evening trains, or joining these trains at an intermediate station, the mountain tourist to Mont aux Sources finds himself at Aberfeldy Station—on the Kroonstad-Ladysmith line—the following morning or afternoon according to the direction from which he is travelling. Here he is met and driven to Rydal Mount Hostel, situated on the gentle slopes of the mountain from which it takes its name. The drive is far from uninteresting, as the Elands River has to be negotiated no less than three times, the first and second crossings being made during the early part of the journey. It is possible, however, to reach Rydal Mount without crossing the river, but this entails a more circuitous route, and one only resorted to when the rain makes the river dangerous to ford. Under the personal supervision of Mr. Tom Casement, the proprietor of Mont aux Sources Hostel, the journey is made amid a glorious environment, the valleys fertile with crops of kaffir corn and maize; the gentler hills, the winding river, and above all, the majestic mountains, have a charm beyond description.

A New Field for Mountaineers.

To the hardy mountain climber from Europe the visit offers new fields to conquer, presenting many difficulties, if not dangers, to overcome. Mountaineering is a sport which can be enjoyed with equal keenness by men of widely different physical and intellectual capacities. It can be approached and pursued in many ways. Mountains, like men, have their characters, and doubtless each kind of mountain makes its own human friends. Some climb for exercise, some for scenery, and some for scientific enlightenment. To each and all of these, the rugged ridges and lofty pinnacles of this section of the Drakensberg offers many inducements and makes its challenge and appeal. And not only to the climber; for the artist and photographer, the geologist and naturalist will still be amply repaid by a visit to Mont aux Sources, one of South Africa's finest scenic "show pieces."

The Tariff at Rydal Mount.

The following is the tariff at Rydal Mount. The mail closes at Johannesburg and in Natal on Sundays and Wednesdays, arriving at Witzies Hoek the following Wednesday and Saturday at 11 a.m. Telegrams may be sent not later than 2 p.m. Tuesdays and Fridays, addressed "Rydal Mount," Witzies Hoek, via Kesteel, arriving there on Wednesdays and Saturdays. Accommodation at Rydal Mount: Per day, 10s.; per week, £2 10s.; per month, £8. Saddle horses (hire): Per day, 5s.; per week, £1 10s.; per month, £4. It may be added that May, June and July are really fine months, and perhaps the most suitable for doing the Tugela Gorge.

MINING MEN AND MATTERS.

Mr. G. E. B. Frood, who for the last nine years has resided at Jagersfontein, occupying the position of Inspector of Mines, is having his headquarters transferred to Bloemfontein.

* * * *

The Gazette announces the appointments of Major A. B. Denne as Chief Inspector of Explosives; Mr. W. H. Pay as Inspector of Explosives; and Mr. Johannes Lodewicus van der Merwe as Chairman of the Miners' Phthisis Board, *vice* Mr. H. O. Buckle, who has resigned owing to pressure of other work.

* * * *

Nearly fifty applications have been received by the School of Mines from students desirous of continuing their studies by the aid of the Government bursaries. The applicants reside in all parts of the Union. Unfortunately only a small proportion can be gratified, as the amount available is relatively small, and the idea is to carry recipients through the four years' course as far as is possible, and as each year's work merits it. These bursaries are not awarded by examination, but on the recommendation of the Council.

* * * *

The annual general meeting of the Geological Society will be held in the Council Chamber, Chamber of Mines, Johannesburg, on Monday evening, January 29, 1912, at 8.30. The agenda will be as follows:—1. To receive and consider the annual report and statement of accounts for the year ended December 31, 1911. 2. To elect thirteen members of Council in place of Messrs. A. von Dessauer, A. L. Hall. H. S. Harger, J. McC. Henderson, G. G. Holmes, H. Kynaston, J. G. Lawn, E. T. Mellor, E. H. V. Melvill, H. Merensky, A. W. Rogers, P. A. Wagner, and R. B. Young, who retire under the rules of the Society. 3. To elect a president, vice-presidents, and honorary secretary, and an auditor for the ensuing year.

ECONOMY IN FUEL.

Users of coal for domestic, business or steam-raising purposes are now recognizing the saving of time and money effected by using only the best Transvaal coal and this coal is mined from the Vaalbank (Middelburg) Colliery.

This coal, which can be obtained at about the same price as inferior coal, gives the highest heating value of any Transvaal coal, burns regularly and gives a minimum of ash or soot, and the fact that a trial order is always followed by repeat orders confirms the favourable opinions expressed by the present users of the coal.

Supplies of Vaalbank coal can be obtained from:—Johannesburg—A. E. Dunstone, Box 5034; The Holmes, Darcy Coal Agency, Box 5176; Benoni—Lindsay & Pirie, Box 5; Unsted & Holland, Box 316; Webb & Co., Box 370; Boksburg—J. D. Campbell, 105, Commissioner Street; Germiston—C. A. Margach, Box 223; Heidelberg—L. Lowenstein, Box 175; Bloemhof—J. Leviton; Kimberley—A. G. Freeman, Box 154; Pretoria—R. Butler & Co, Box 747; J. Franklin, Box 51; Middelburg—H. Laver & Co., Box 94; Lydenburg—M. McGee, Box 24; Pilgrim's Rest—J. H. Alcock, Box 36; Barberton—D. Wasserberg & Co., Box 167; Delagoa Bay—I. Sangiorgio-Borruso, Box 366; Pietersburg—B. Herman, Box 36.

Black Sands Reduction.

TREATMENT OF REFRACTORY ORES.

The second annual meeting of shareholders in the Black Sands Reduction Co. of S.A., Ltd., was held in the boardroom, Trust Building, Johannesburg, on Saturday, the 13th inst, Mr. J. A. Hart presiding. There were present: Messrs. J. M. Fisher, H. A. Powell, L. B. Chesterton, W. Evans, C. R. MacGillivray, G. W. J. MacFarlane, A. McElhinney, G. Littlejohn, J. B. MacKillop and J. Mitchell, representing personally and by proxy 1,924 shares out of a total issue of 5,775 shares. In moving the adoption of the reports and balance sheet, the Chairman briefly reviewed the history and present position of the company. The prejudice on these fields against processes involving the roasting of ores was still quite considerable, but he was glad to be able to tell them that at all events one important mine, whose sulphide ore was of a highly refractory character, contemplated giving the Siegert process a thorough trial; and, remembering the very satisfactory tests already made on this ore, he had little doubt as to results of the proposed investigation. The position of the company was quite sound; they were free from debt, and, having reduced all expenditure to a minimum, were easily able to carry on until definite business offered. After some discussion, in which Messrs. MacFarlane, Chesterton, McElhinney and Fisher took part, the reports and balance sheet were unanimously adopted. Messrs. C. R. MacGillivray, J. B. MacKillop and J. Matthew were unanimously elected directors in place of Messrs. G. W. J. MacFarlane, L. B. Chesterton and T. S. Wilkes, resigned. Mr. E. Danckwerts was unanimously elected auditor, and his remuneration for the past audit left in the hands of the directors. A vote of thanks to the Chairman concluded the meeting.

LITERATURE FOR

MINING CAMPS.

MINE READING ROOMS should send direct to London for their Literary Books and Periodicals, or for Technical Books for individual use. List of Rates of Subscription for 1,500 Periodicals; also complete Book Catalogue of 180 pp. post free.

Colonial Librarians' Handbook free on application.

SPECIALITY: Colonial Editions of Fiction.

Remit direct, or through your London Office at choice.

ALFRED WILSON, Export Bookseller,

18-19 Gracechurch Street, LONDON, E.C.

(Established 1851.)

Tati Concessions.

The directors' report for the year ended June 30th last announces the sale of several thousand acres of land, with negotiations in hand with respect to the sale of further large areas, also with respect to timber and mines. Mr. Temby, one of the directors, is now in South Africa, with a view to effecting a reorganisation of the company and the introduction of further working capital.

Welgedacht.

The directors of the New African Company opposed a plan put forward with a view to its amalgamation with the Cloverfield and Geygerle companies, as they did not consider the proposed scheme was one which would be likely to benefit their interests, indeed quite the reverse. This opposition, which was supported by a large majority of Welgedacht shareholders, has resulted in displacing two directors from the board of the Welgedacht company who were in favour of the amalgamation, and substituting for them two members of the New African Board. The latter are also in favour of holding directors' and shareholders' meetings of the Welgedacht company in London, where practically the whole of the shares are held, as against the policy of holding all such meetings in Johannesburg, and arrangements with this object in view are now being made. According to the chairman of the New African Company, that company owns an extensive coal field. Operations have been conducted on a small portion of this field for some years past; but owing to the disturbed nature of the coal measures the results have not been satisfactory. The directors, however, do not believe that this disturbance extends throughout the whole of this large area, and they have accordingly commenced further prospecting, and new bore-holes are being sunk for this purpose. The amount of coal in the Welgedacht farm was estimated by Mr. Wenz, the well-known mining engineer, at 15,000,000 tons. With the exception of one coal mine (almost washed out) its situation is more favourable than any other local coalfields, as it is some fifty or sixty miles nearer Johannesburg, and the consequent saving in railway rates should promise a considerable profit when coal of good quality is being won. On the gold section considerable trouble has been met in sinking the main shaft, owing to the large influx of water, and operations for the present have been suspended pending the result of development work on neighbouring mines. The Welgedacht Company has over £40,000 of cash in hand—representing more than 5s. per share on its present issued capital.

CYANIDE of SODIUM, 120 %
ZINC DUST, SHEETS and SHAVINGS.
MABOR FUSION CUPELS and MATERIAL.
3 STAR CRUCIBLES and CRUCIBLE BARS.
3 STAR LITHARGE.
HARDWOOD MINING POLES and SAWING TIMBER.
"BRUNSVIGA" Calculating Machines.

RICHARD HEYMANN & CO.,
73/8 Exploration Buildings.
P.O. Box 2425.
Telephone 351.
Telegrams: "Extra."

Zaaiplaats Tin.

The board of the Zaaiplaats Tin Mining Company, Ltd., have declared a further interim dividend of 50 per cent., which will be paid as soon as possible after March 1, 1912, to all shareholders registered in the books of the company on January 31, 1912.

Amatongaland Rubber.

Sir Cornthwaite Rason, presiding recently at the meeting of the Amatongaland Rubber Corporation, Ltd., said that their work had been greatly delayed by causes with which they were familiar, and which they had taken steps to remedy. So far as transport was concerned, they had been hindered by the Government quarantine arrangements in Zululand owing to tsetse fly. Ceara rubber appeared to thrive exceedingly well in Natal, and there was a ready native market for mealies. In addition to rubber, they proposed to cultivate cotton, sugar, mealies and ground nuts. According to the latest reports, they had a valuable property, and would soon make up for their present disappointment.

Modder Deep Levels.

QUARTER ENDED 31st DECEMBER.

The following are particulars of work done on the property of the above-named company during the quarter ended 31st December last:—Shafts Nos. 1 and 2 were sunk to the respective depths of 1,949 feet and 1,622 feet. The connecting cross-cut at the 1,400 ft. level and the cutting of the Pump Chamber and Sump were completed. The erection of the pump has been delayed through the non-delivery, due to an accident to the steamer in which it was shipped, and delivery is not expected until March. Sinking at the No. 2 Shaft was somewhat delayed by the influx of water, but this difficulty has been overcome and sinking is now proceeding normally.

Three facts regarding the Transvaal worth remembering:
(1) The Transvaal is producing over one-third of the world's gold output.
(2) Transvaal mines have spent 24 millions sterling on machinery and plant.
(3) The *South African Mining Journal* is the official organ of the Mine Managers' Association.

Advertiser, who has been Sub-Manager for several years of a large Corporation in South Africa, requires a position of trust; experienced bookkeeper; salary no object; would accept any position to commence with.—Apply, "S. L.," c/o *S.A. Mining Journal*, Box 963, Johannesburg.

HENRY R. MERTON & Co., Ltd.
2, METAL EXCHANGE BUILDINGS,
LEADENHALL AVENUE, LONDON, E.C.
England.
Cable Address: "MERTON," London.

SELLERS OF
Copper, Tin, Lead, Spelter, Antimony, Nickel, Aluminium, Quicksilver, Sulphate of Copper, Zinc-dust.

South African Representatives:
MESSRS. PARRY, LEON & Co.,
Mercantile Buildings, Simmonds Street,
P.O. Box 1101. JOHANNESBURG.

THE WEEK IN THE SHAREMARKET.

An Improvement Checks a Drooping Tendency—E.R.P.M. Compromise Helps to Brighten Outlook.

THE satisfactory E.R.P.M. meeting on Thursday undoubtedly gave a much needed check to falling prices. Up to and including Thursday the tendency here was downwards, but the market opened cheerfully on Friday. With the labour outlook more satisfactory, there is reason to hope for some early all-round improvement in prices. Of course, the strenuous session of the Union Parliament, expected to begin this month, is not likely to help market activity much. Indeed, it is an open secret that one or two expected flotations have been postponed a few months in view of the present depressed state of the market. That things will come right after a while no one doubts, though the period of waiting is apt to be trying. Meanwhile, the paucity of business is marked and the few fluctuations are reflected in the following table:—

	Friday, 12th.	Sat., 13th.	Monday, 15th.	Tuesday, 16th.	Wed., 17th.	Thurs. 18th.
African Farms ...	17 0	17 0	16 9	16 9	16 6	16 3
Aurora West ...	...	7 6S	...	...	...	...
Adair-Usher Process	1 6B	1 6B	...	...	1 6B	...
African-European In.	...	11 0S	...	...	...	10 6S
Apex Mines ...	36 0S	...	...	...	33 6B	...
Bantjes Consolidated	23 9	23 6B	23 3B	23 6	24 0	23 9B
Benonis	9 9B	9 9	10 0	...	10 0B	10 3B
Blaauwbosch ...	20 0S	...	17 0S	...	20 0S	20 0S
Bushveld Tins ...	...	0 8B	0 8B	0 9B	0 8B	0 9B
Brakpan Mines ...	51 0B	...	...	...	...	51 3B
British S A. ...	...	...	...	...	28 0S	...
City and Suburban ...	46 2B	46 3B	46 6B	46 9B	47 0	46 9B
City Deeps	50 0B	50 0B	50 9B	52 0	51 0B	51 3
Cloverfield Mines ...	4 1B	4 0B	4 0B	4 0B	4 0	3 9B
Cons. Langlaagtes ...	17 0B	17 3B	17 0B	17 3	17 6	17 3S
Cons. Main Reefs ...	16 6	16 0	16 0	16 0	15 9S	15 6B
Clydesdales	12 0B	12 0B	...	...	...	...
Coronation Freeholds	...	0 7	0 6	...	...	...
Concrete Cons. ...	17 0S	17 0S	10 0B	...	10 0B	...
Cinderella Cons. ...	30 0S	...	...	...	...	...
Crown Mines ...	...	...	130 0B	...	...	...
East Rand Cent. ...	8 0B	8 0B	8 0B	...	8 0	7 9B
East Rand Coals ...	2 8B	2 8B	2 6B	2 8B	2 6B	2 5
East Rand Deeps ...	...	2 3S	...	...	1 10B	...
East Rand Props. ...	66 6	66 6	67 0	66 0B	...	65 0
East Rand Deb. ...	£95B	£96	£96	£96	£96B	£95B
Eastern Gold Mines	2 0B	2 0B	2 0	1 10B	2 0S	1 10B
Govt. Areas... ...	21 6B	21 9B	21 6S	21 6B	22 0	21 9B
Glencoe (Natal) Colls.	6 0B	6 0B	6 0B	6 0B	6 0B	5 9B
Glynn's Lydenburgs	38 0S	40 0S	39 0S	38 0S	38 0S	35 0S
Ginsbergs	29 6B	...	29 0B	...	...	29 0S
Geldenhuis Deeps ...	41 6B	...	...	40 0	40 0B	40 0B
General Minings ...	...	23 0	...	20 0B	19 6B	...
Jumpers	17 0S	16 6S	16 6S	...	...	15 6S
Jupiters	8 6B	8 6B	8 0B	8 3B	8 6B	8 0B
Kaalfontein Diamonds	0 5B	0 7	0 5B	0 6B	...	0 6B
Klerksdorp Props. ...	3 3B	3 6	3 1B	3 5	3 4S	3 3
Knight Centrals ...	...	15 6S	15 0B	15 0B	15 0B	15 0S
Lace Props.	3 3B	3 3B	3 3B	3 1B	3 1	3 0S
Lydenburg Gold Farm	8 4B	8 3B	8 3S	8 4	8 4B	8 4
Main Reef Wests ...	25 6	25 3S	25 6B	26 0	25 3	25 0B
Modder B's	53 0B	52 6S	52 9	53 0B	52 9B	52 6B
Midas Deeps ...	1 2	1 2B	1 2S	1 2S	1 2B	1 3
Middelvlei Estates...	2 0S	...	2 0B	2 0S	...	...
Meyer and Chaltons	78 0B	...	...	...	78 0B	...
New Eras	5 6B	5 6B	5 6B	5 6B	5 6	5 7B
New Kleinfonteins...	27 0B	27 6B	28 0	27 6B	28 3	...
New Rietfonteins ...	12 0	11 9	11 9	11 3B	11 6	11 3B
New Unifieds ...	18 0B	19 6S	18 0S	19 6S	19 6S	19 6S
New Boksburgs ...	2 0S	2 0S	...	...	...	2 0S
Nigels	...	19 6B	...	...	20 0	21 0S
Orange Diamonds ...	2 5	2 3B	2 3	2 0B	2 0	1 10
Pretoria Cement Co.	54 6B	54 0B	55 3B	55 6S	55 0B	56 0S
Premiers Def. 2s. 6d.	190 0B	...	...	...	202 6S	...
Premiers Preferred	163 9B	163 9B	...	...	...	165 0B
Potchefstroom Est....	1 6B	...	1 6S	...	...	...
Rand Nucleus ...	3 1S	3 0S	...	2 9S	3 0S	2 9B
Randfontein Estates	33 3B	32 9	33 0	32 9B	32 9	32 3B
Robinson Deeps ...	56 6S	...	...	56 0	...	...
Rooiberg Minerals ...	26 9B	27 0	26 6B	26 0B	26 6	26 6S
Rand Klip	4 0B	...	4 0B	4 0B	...	4 0B
Roberts Victors ...	...	21 0B	...	20 0S	...	...
Rood. U.M.R. ...	...	...	...	21 0B	30 0S	24 0S
Rood. Durban Deeps	25 0B	...	...	...	...	...
Randfontein Deeps...	5 9S	5 6S	...	...	5 3S	...
Ryan Nigels ..	...	4 0B	...	...	...	...
Rand Collieries ...	6 0B	...	...	...	7 6B	...
Simmer Deeps ...	4 0	4 0S	...	5 0S	...	...
South African Lands	4 2	4 2B	4 2	4 2B	4 2B	4 1B
S. Randfontein Deeps	2 9B	3 0	2 7B	2 6B	2 9	3 0S
Sub Nigels	6 9B	6 9B	6 8B	6 6B	6 6B	...
S. A. Breweries ...	38 6B	40 0S	40 0S	40 0S	40 0S	40 0S
Springs Mines ...	10 0S	...	11 0S	8 0B	...	11 0S
Swaziland Tins	25 3B	30 0B	32 6B	32 6B	32 6B	32 6B
Simmer Easts ...	0 3S	0 3S	0 3S	0 3S	0 1B	0 3S
S.A. Tin Mines ...	10 0S	...	10 0S	8 0S	7 6S	...
Trans. G.M. Estates	...	...	...	...	...	45 0B
Temple Tins... ...	2 9B	2 9B	2 9B	2 9B	2 9B	3 0
Trans. Cons. Lands	...	30 0B	...	...	...	...
Trans. Coal Trusts...	...	...	...	33 9B	33 6B	31 0S
Van Ryn Deeps ...	7 9B	7 9B	7 9B	7 10	8 0	8 3
Village Deeps ...	42 6B	42 6B	42 6B	42 3S	42 3B	42 0B
Voorspoed Diamonds	17 0B	16 0B	16 3B	...	...	...
Villiage Main Reefs	65 0B	...	...	...	...	...
Witbank Collieries...	...	42 0B	42 0B	...	54 0B	...
Wolhuters	22 9B	22 9B	22 6B	22 6B	22 9	22 9B
Wit. Deeps	56 6B	56 6	55 3	51 3B	52 0B	52 6B
West Rand Con. ...	11 0B	11 0B	...	...	...	10 0B
Zaaiplaats	76 6B	76 6B	75 0B	77 0B	77 0B	75 6B

B Buyers. S Sellers.

INVESTORS' DIARY.

The following company meetings have been announced :—

Jan. 24.—Randfontein Central; Langlaagte Estate; Randfontein Estates.
Feb. 20.—Premier (Transvaal) Diamond Mining Co.
Feb. 28.—East Rand Prop. Mines.
Feb. 29.—Worcester Exploration Co. (Worcester C.P.).
March 6.—Crown Mines.
March 7.—Rose Deep.
March 8.—National Bank (Pretoria); Geldenhuis Deep.
March 12.—Durban Rood. Deep.
March 13.—Robinson G.M.
March 14.—Bantjes Con. Mines.
March 15.—Village Deep.
March 20.—City Deep; Lancaster West; May Consolidated.
March 21.—Ferreira G.M.
March 22.—Modder "B."
March 26.—Cassel Coal Co.
March 27.—Rand Mines.
March 29.—Simmer Deep; Jupiter.
April 12.—Transvaal Consolidated Lands.

THE STOBIE PATENT RESPIRATOR

Only weighs half an ounce. Cheapest, most effective and comfortable in the market.

Order wholesale from Stobie Company (Ltd.), Box 2321, Johannesburg, or retail locally through your chemist.

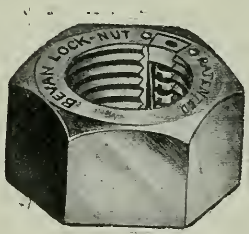
Miners' Phthisis prevented by the use of Stobie Respirator.

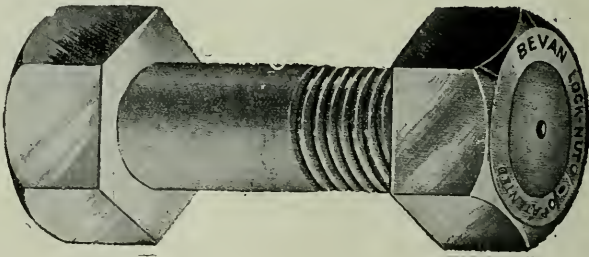
Mine Managers AND Engineers.

Mines and Works Regulations, Chap. IV., Reg. 15 (3).

READS AS FOLLOWS:

"Such bolts and other fittings of drums, brakes, and clutches, as might be a source of danger in the event of their becoming loosened, shall be rendered secure by means of suitable locking devices"





The Bevan Lock Nut

has proved to be far and away superior and cheaper than any other locking device in the World.

All Sizes always on Hand.

Prices and Samples from Sole Agents:

POWER & GREATREX,

7 & 8, Bettelheim Buildings, Johannesburg.

Box 1384. 'Phone 1118. Teleg.: "PUSHING."

THE STANDARD ANTI-FRICTION METAL OF THE WORLD
MAGNOLIA METAL
FLOWER BRAND. MAGNOLIA ANTIFRICTION METAL FLOWER BRAND.
TRADE MARK. FACSIMILE OF INGOT. TRADE MARK.
TO PREVENT IMPOSITION SPECIFY "FLOWER BRAND."
THE MAGNOLIA ANTI-FRICTION METAL CO. OF GREAT BRITAIN L^{TD}
49, QUEEN VICTORIA STREET, LONDON, E.C.
Sole Agents for South Africa:- MESSRS. FRASER & CHALMERS, LTD. JOHANNESBURG, BULUWAYO AND SALISBURY.
BEARING METALS TO SUIT ALL CONDITIONS SUPPLIED. CATALOGUE SENT POST FREE.

Engineering Notes and News.

Large Winding Engines for South India.

Two of the largest winding engines ever sent to India are being manufactured by the Sandycroft Foundry Co., of Sandycroft, near Chester, for a colliery in the south of India. The two engines are identical in every respect, and will wind from the same vertical shaft, which has a depth of 3,700 feet. The speed of winding will be 3,000 ft. per min., and the unbalanced load 15·5 tons. Superheated steam will be used at a pressure of 120 lbs. per sq. in. Both the cylinders are 42 ins. in diameter by 7 ft. stroke, and when the engine is running at 48 revolutions per minute it will develop 5,500 h.p. The total weight is 250 tons. The cranks are of the overhung disc type, while the winding drum is carried between the two main bearings. Opposite each end of the crank shaft there is mounted a short length of shafting with its own bearings. Each is driven from a main crank-pin by means of drag links. These shafts carry the eccentrics of the valve motion, the depth indicating gear, etc. The valves are of the Corliss type. The valve spindles have spherical metallic packings, and the end pressure of the valves is balanced by springs. The cylinders have separate liners, and the spaces between the liners and body castings form steam jackets which are drained by means of steam traps. The body castings are made in three separate parts, the central cylindrical portion forming one, while the end pieces, in which the valves are arranged, constitute the other two. The pistons are fitted with metallic packing rings, the outward pressure of which is adjustable. The piston rods are 8 ins. in diameter, and are fitted with packing by the United States Metallic Packing Co., of Bradford. The crossheads are of steel with cast-iron adjustable slippers. A noteworthy feature is the method of attaching the piston rods to the crossheads. Each rod passes through a steel plate, to which it is secured by heavy nuts on the rod, one on either side of the plate. The plate is bolted to the crosshead by four bolts. This method has the advantage of allowing adjustments in the distance between the centres of the piston and crosshead to be made with ease without affecting connecting or disconnecting the crosshead from the piston rod. The guides are of circular form 41 ins. in diameter. The drumshaft bearings, which are cast with the beds, have the steps lined with special white metal, and are 21 ins. in diameter by 33 ins. long. The connecting rods have screw and wedge adjustments at both ends. A special feature in the design of the crank discs is that they are each made in two pieces. The discs are 9 ft. 2 ins. in diameter, and have a separate centre hub with a flange cast on one end of it. The disc itself is bored to fit the hub to which it is keyed and is bolted to the flange. This makes it very secure, and has the advantage of reducing the weight and overall dimensions of the drumshaft for transport, as the discs can be sent away separate from it. Brakes, operated from the driver's platform by foot, hand wheel and screw, are arranged to work on the outer edges of the discs. The drumshaft is 25 ins. in diameter at the centre, its overall length being 27 ft. At the journals the diameter is 21 ins. The drum is of the cylindro-conical type, of cast iron, built in sections. The conical part is grooved for 1¾ ins. diameter rope, and ranges from 16 ft. in diameter up to the plain cylindrical part which is 20 ft. in diameter and 8 ft. 9 ins. wide. Two small internal drums are fitted inside the main drum for carrying spare rope, which can be payed out as required. There are two main brakes of the suspended curved post type, pressure being applied to both ends of the posts. They are operated by a steam brake engine, the brakes being put on by means of a weight and held off by steam. Steam can also be put on the top side of the brake engine piston if extra pressure on the brakes is required. The brakes are adjusted automatically as wear of the brake blocks takes place. The reversing of the engine is effected by means of steam gear having an oil locking and controlling cylinder. The main steam valve is 18½ ins. in diameter, of the single beat type, and balanced by a steam piston which makes it very easy to operate. The driver's platform, as can be seen from the photograph, is situated on the left hand side of the

HIC TRADE MARK.
H. INCLEDON & Co., Ltd.
(Head Office, Birmingham: Registered in England.)
Telephones 1911 and 1912,
P.O. Box 3620,
JOHANNESBURG.
ALL SIZES OF
PIPING, AND FITTINGS,
VALVES, Etc.
FROM ¼″ TO 18″ KEPT IN STOCK.

engine, having all the operating levers fixed on it in a convenient position. The governor is of the spring loaded high speed type and very powerful. During acceleration the engine takes steam up to about seven-eighths of the stroke, but when nearing full speed the governor begins to open, operates the cut off gear and governs the speed of the engine. The controlling gear, which is a very interesting piece of mechanism, is of the Gott pattern, and is provided with the object of preventing overspeed, overwinding, or starting in the wrong direction. In case of overspeed in any part of the wind the gear automatically shuts off steam and applies the brakes. It also operates in the same way if on nearing the surface the driver has not reduced speed sufficiently to land the cage safely, or if the driver starts his wind in the wrong direction—that is, if he is taking the cage into the headgear instead of down the shaft, the brakes are automatically applied and the steam is shut off as before.

FACTS AND FIGURES

of over 2,500 Securities quoted on the London Stock Exchange are given in the

"INVESTOR'S BLUE BOOK," 1912 EDITION

Bankers, Brokers and Investors say that it is indispensable to them. It is a book which gives you the **Essential Facts** and **expresses opinions**. It is not a mass of colourless information of no practical value. It contains more real information regarding the securities with which it deals than any other book of its kind ever published. Its facts and figures have been **Officially Checked**; its opinions are unprejudiced and **Absolutely Independent.** It answers many of the questions you are from time to time asking in regard to financial affairs. It is published at 3s. 6d. by the "Investor's Chronicle," Tower Chambers, London Wall, London, England.

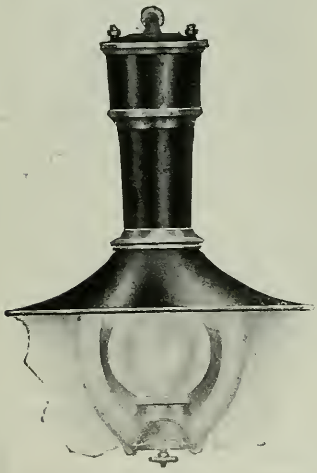
Explanatory Pamphlet on Application.

New Patents.

5. John Shaplon Stanbury.—Sliding roller frame and bearing for roller to work in.
6. Gwynnes, Ltd., John Frederick Breeze, William Richard Macdonald.—Improvements relating to electric motors and to pumps connected thereto.
7. Robert Dale McCarter.—Improvements in and relating to metallic railway ties or sleepers.
8. Thomas Johnson.—Improvements in or relating to blasting.
9. James Millar Neil.—Process for the precipitation of precious metals from cyanide solution.
10. Harry Irving Andrews.—Method for dessicating milk.
11. Allan Thomas Cocking and Kynoch, Limited.—Improvements in and relating to explosives.
12. Allan Thomas Cocking and Kynochs, Limited.—Improvements in and relating to the manufacture of explosives.
13. Hugh MacKenzie Leslie.—Improvements in the extraction of metals from their ores.
14. Hugh MacKenzie Leslie.—Improvements in the extraction of metals from their ores.
15. Axel Julius Laurits Lassen.—Improvements in bottle closures.
16. Gustav Adolf Ferdinand Heinze.—An improved aspirator.

Cape Copper Railway.

A deputation representing Namaqualand interests, and also the Capetown Chamber of Commerce, waited on Mr. Sauer this week, urging that the Government should take over the Cape Copper Company's railways. Mr. Sauer, in reply, said a railway scheme would soon be submitted to Parliament, when the question of the purchase of this line would be considered. Even if the Government did not buy the line, the present conditions need not necessarily continue. He had already secured a reduction in rates, and had tried for a larger reduction. The present state could not continue. If they did not get reasonable rates the Government must purchase the line, or consider building a line themselves.



Sole Agents—

WESTERN ELECTRIC CO., LTD.

(Incorporated in England),

Standard Bank Chambers,

JOHANNESBURG.

Box 1571. 'Phone 2118.

Telegrams: "Microphone."

JANDUS

REGENERATIVE ARC LAMP.

8,000

in use.

Most Effective Horizontal Distribution.

50 per cent. more light than an ordinary flame arc, SIX TIMES AS EFFICIENT AS METALLIC FILAMENT LAMPS, and absolutely steady

Lowest Carbon Costs—80 hours life per pair.

Commerce and Industries.

National Bank of S.A.

Subject to the final audit of the accounts, the directors of the National Bank of South Africa intend to recommend shareholders at the ordinary general meeting to be held on the 8th of March next, to declare a dividend at the rate of six per cent. for the year ended the 31st December, 1911, to place £50,000 to reserve fund, £20,000 in reduction of the purchase account of the National Bank of the Orange River Colony, Ltd., £5,000 to pension fund, to carry forward £27,700 and to award out of the last-named amount a bonus to the staff.

* * * *

Future of Mozambique.

The Portuguese Minister for the Colonies has drafted a Bill which provides for the establishment of a bank, with a capital of £3,500,000, for the development of the Portuguese colonies in Africa. The capital is entirely subscribed in Great Britain. It is also announced that a number of South African capitalists have guaranteed the revenue of the Lourenco Marques Railway and port, with a view to securing the development of Mozambique.

* * * *

Johannesburg Building Statistics.

The number of separate buildings or tenements, the plans of which were approved by the Johannesburg Municipal Council during December, 1911 (including alterations and additions) was as follows:—December, 1911, 642; estimated cost, £184,806. December, 1910, 639; estimated cost, £95,823. Six months ending 31st December, 1911, 4,202; estimated cost, £1,054,060. Twelve months ending 30th June, 1911, 7,422; estimated cost, £1,438,895. Twelve months ending 30th June, 1910, 6,289; estimated cost, £1,108,731. Twelve months ending 30th June, 1909, 4,683; estimated cost, £435,457. January, 1911, 539; estimated cost, £122,984. February, 581; estimated cost, £104,600. March, 734; estimated cost, £131,953. April, 573; estimated cost, £100,799. May, 808; estimated cost, £180,769. June, 591; estimated cost, £115,589. July, 597; estimated cost, £136,465. August, 594; estimated cost, £96,181. September, 906; estimated cost, £239,364. October, 657; estimated cost, £217,050. November, 806; estimated cost, £180,194. December, 642; estimated cost, £184,806.

* * * *

Canadian Dairy Implements for South Africa.

In one of their recent letters to Canadian exporters on business opportunities in South Africa, Messrs. Elder Dempster & Co., who run the subsidised shipping service between the Dominion and the Union, devote attention to the market for dairy implements and machinery, in which Canadian exports are said to be surprisingly small. It is, nevertheless, the steamship company say, a market which the Dominion manufacturers would be well advised to cultivate. Three different makes of churns are practically all the exports of Canadian dairy appliances now being exported to South Africa. Such articles of Canadian origin, it appears, are generally regarded in South Africa as inferior to Australian productions, both in finish and workmanship. The Australian firm of Cherry is very favourably regarded in the Union, as its productions are in most markets. The tendency to establish co-operative creameries in South Africa is noted as a factor operating against the market for hand churns; but there must always be a great many farmers in South Africa who cannot make use of a central creamery. Canadian manufacturers are strongly urged to export samples of their productions, and the Elder Dempster Co. for their part undertake to carry them to South Africa free. We are interested to note that the freight rates on churns from Canadian ports to South Africa are 2s. 6d. per ton lower than the rates from American ports, and 1s. 3d. less than the rates now current from British ports.

African Banking.

The report of the African Banking Corporation, Limited, for the half-year ended September 30 last, states that in order to meet the requirements of the resolutions passed and confirmed at the extraordinary general meetings of June 21 and July 6 last, the board have decided that the date of the annual balance shall be September 30 in each year, and that the general meeting shall be held in the January following. The profit and loss account shows a gross profit of £122,759, including £13,980 brought forward from last account. After deducting current charges and rebate, placing £10,000 to reserve fund, carrying £1,200 to staff guarantee and savings fund, and allowing £969 for depreciation of furniture, there remains the sum of £26,641, which the directors propose to apply as follows:—Dividend at the rate of 6 per cent. per annum for the half-year ended September 30, 1911, subject to income-tax, £12,000; balance to be carried forward, £14,641.

* * * *

The Dunlop Company.

The annual meeting of the Dunlop Company, held recently in London, presented many features of interest. Mr. Harvey du Cros presided, and, *inter alia*, said: The motor car has established itself firmly in the social life of the country. Even in the general newspaper press, they found high-class daily and weekly papers devoting pages to the subject every week. Prices had been imprudently reduced. Where stocks were large this was a serious matter. They had decided, despite the fall in prices of tyres, not to reduce quality, because they were determined to maintain their reputation at all costs. Consequently not a particle of business had been diverted from them. Traders had protested against these reductions because they were not for the good of the public. They realised that if prices are reduced quality in most cases must suffer. The company had elected to maintain its quality and retain its trade. In regard to that point nothing could exceed the loyalty, devotion, and keenness of the staff. There was no home competition that gave trouble. It was foreign trade that they had to reckon with. He desired to thank firms that handled foreign cars for allying with them home-made British tyres. The Germans were regarded as our greatest opponents. The company had a factory in Germany and nothing could be fairer than their treatment there. There was no difficulty, no trouble, no friction. In this country things are not evenly balanced, and it is the home concern that is unfairly treated. The English market had been created by English manufacturers, yet we are only in the position of leaseholders, while the German is a freeholder. Our German competitor had two markets to our one, and he was the first to reduce prices. Statesmen said these troubles should be removed by enterprise and resource on the part of our manufacturers. He did not think we were lacking in those attributes. The attitude of the directors was one of quiet confidence. The interim dividend had been paid because they had been doing an enormous business, and the violent fluctuations in the price of rubber had not set in, nor could they be foreseen. The directors had not sold shares, and there had been a very small turnover of shares. He believed all the directors had increased their holdings. They were greatly interested in cycle tyres. The first quarter of the current financial year showed an improvement in their cycle tyre business over last year of 59 per cent. The Tyre Co. had sold no rubber shares.

Telephone 217. Box 2127.

GEORGE McINNES, B.Sc.,

Importer of Electrical Supplies for the Trade.

Sole Agent for the "ARCONA" Metal Filament Lamp.

MARSHALL SQUARE, JOHANNESBURG.

ESTABLISHED 1892.

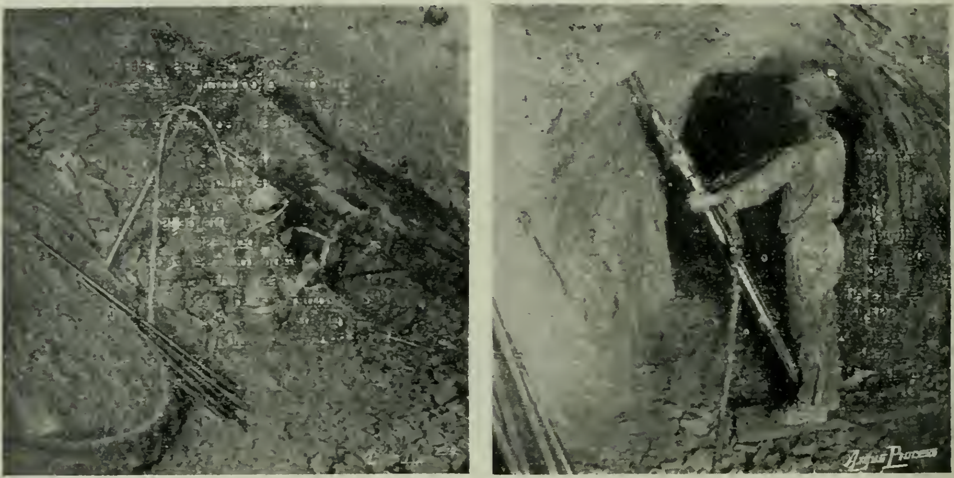
FOR

WET HOLES

OR DRY HOLES

USE OUR

BC-11 DRILLS.



BC-11 DRILLS

ON THE JUPITER. ON THE CITY DEEP.

INGERSOLL-RAND

Coy.,

Exploration Buildings, Johannesburg.

Phone No. 1871. P.O. Box 1809. Telegrams: "Outsider," Johannesburg.

RHODESIAN AGENTS: **JOHNSON & FLETCHER,** BULAWAYO. SALISBURY.

S.A. Railways. The following statement shows for the month of December, 1911, the approximate tonnage and percentage of tonnage of commercial seaborne traffic torwarded from the different ports to stations within the competitive zone, *i.e.*, Vereeniging-Pretoria, Springs-Klerksdorp inclusive, and including the South Rand and Vereeniging-Canada Junction lines:—

Traffic.	Tonnage.			Percentage.		
	Cape Ports.	Port Natal.	Lourenco Marques.	Cape Ports.	Port Natal.	Lourenco Marques.
Group I.						
Rate 1 .. ... Rate 2 .. ... Rate 3	4,181	8,986	13,186	15·86	34·10	50·04
Group II.						
Rate 4 ... ... Rate 5 ... ... Rate 6 ... ... Rate 7 ... ... Rates 8 and 13 ...	1,051	2,823	11,734	6·73	18·09	75·18
Total	5,232	11,809	24.920	12·47	28·14	59·39

* * * *

The World's Coal Output. Interesting figures are contained in a statistical return relating to the production, etc., of coal in the British Empire and the principal foreign countries in each year from 1886 to 1910, which was issued as a Parliamentary White Paper recently. With the exception of the United Kingdom, the production of 1910 in Germany, France, Belgian, and the United States exceeded that of any previous year, their aggregate output being 923,000,000 tons, or an increase of 42,000,000 tons on the output of 1909, and 27,000,000 tons more than in 1907, when the highest previous total was reached. Except in the United States and Germany, the increases were small, the former country accounting for over 4,000,000 tons of the increase over 1909. In the United Kingdom the output in 1910 fell short of that of 1907 by nearly 3,500,000 tons, while the figures for Belgium show little variation during the last four years. Of the remaining countries included in the tables Russia alone has a production exceeding 20,000,000 tons. The output of the United Kingdom in 1910 was 264,433,000 tons, compared with 150,372,000 tons in Germany, 37,254,000 tons in France, and 447,837,000 tons in the United States. It will be seen that the production of the United States in 1910 exceeded that of the United Kingdom by nearly 70 per cent. The total known production of the world—exclusive of brown coal or lignite—in 1910 was about 1,035,000,000 tons. The variations in the average value of coal at the pit's mouth in the United States have been comparatively small in recent years. In the principal European countries the largely increased output of 1907 was accompanied by a considerable rise in the average value per ton, followed in the cases of Germany and France by further increases in 1908, but by some falling-off in the United Kingdom and in Belgium. In 1909 a reduction in the average value of the coal raised was shown in all four of these countries, while in 1910 there has been a rise of 1½d. per ton in the United Kingdom, a rise of 2d. per ton in Belgium, and a fall of 2¾d. per ton in Germany, as compared with the previous year. The average value per ton has increased considerably in each of the European countries mentioned above during the last twenty-five years, the average for each successive quinquennial period showing an advance, until in the period 1906-10 it reached 8s. 3½d. in the United Kingdom, 9s. 10d. in Germany, and 12s. 6¼d. in Belgium, while in France it averaged 12s. 3¾d. per ton in the four years ended 1909; in the United States the price fell from 1886 to 1898, but has since recovered to an average of 5s. 10d. per ton in the period 1906-1910.

* * * *

Dairy Instructors for the Union. The services of Dairy Instructors are now available for all the Provinces. Mr. L. J. Veenstra has been appointed Dairy Instructor for the Transvaal, which Province has now come into line with the Cape and the Free State in this respect. It may be notified for general information of farmers, dairymen, and breeders that competent instructors have been appointed whose services are available for practical and demonstrative instruction and advice on the following subjects: Feeding, stabling, and rearing of dairy herds; improvements in dairying; creaming and separating; butter making and hard and soft cheese making; and testing and investigating dairy products; and matters relative to tbe dairy industry in general. Farmers, dairymen, and all others wishing to avail themselves of the above are requested to notify their intentions to the Superintendent of Dairying, Agricultural Department, Pretoria; for the Free State to Dairy Instructor W. Oosterlaak, Bloemfontein; and for the Cape to Dairy Inspector T. R. D. Carruthers, Capetown.

New Companies.

The following new companies were registered in December:—

The Parys Recreation Company, Ltd.; capital £1,500.
United Oxygen-Acetylene Welding and Cutting Company, Ltd.; capital £400.
Stobie Respirator Company, Ltd.; capital £1,500.
The Union Engineering and Importing Company, Ltd.; capital £2,000.
Criterion Theatres (South Africa), Ltd.; capital £10,000.
The Phoenician (Rhodesia) Company, Ltd.; capital £1.890.
African Film Syndicate, Ltd.; capital £8.000.
W. and T. Avery (S.A.), Ltd.; capital £5.000.
The Transvaal Soap Company, Ltd.; capital £40,000.
Windsor Theatres, Ltd.: capital £1,000.
The Masonic Hotel, Ltd.; capital £3.500.
The Irish Ham Store, Ltd.; £750.

Increases of Capital.

De Vaalrivier Dorschmachine Mattschappij, Beperkt: increased from £2,000 to £3,000.
The Imperial Cold Storage and Supply Company, Ltd.: increased from £201,000 to £400,000.
Romola Nigel Gold Mining Company Ltd.: increased from £35,000 to £50.000.
Rustenburg Citrus Growers, Ltd.: increased from £8.000 to £24.500.

Liquidations.

The following companies have been placed in liquidation:—

Ophirton Brick and Tile Works, Ltd.
Piva Syndicate, Ltd.
The Welgelegen Diamond Mining Co., Ltd.
Standard Oil Company of South Africa, Ltd.
The Paardeberg West Diamond Mines, Ltd.
The Brakdam Diamond Mines, Ltd.
Outlook Gold Mining Company, Ltd
Strauss Patent Torch Company, Ltd.
E. W. Collins, Ltd.
The Goodwin Tin Syndicate, Ltd.
Weynek Tin Company, Ltd.
Great Eastern Collieries, Ltd.
Swazi Coal Mines, Ltd.

Draughtsman, used to Mine and Surface work, plotting and planning, as well as quantity surveying, requires appointment; excellent local credentials.—Apply, "J. B.," c/o *S.A. Mining Journal*, Box 963, Johannesburg.

Analytical Chemist.—SITUATION WANTED.

Some years practical experience in Government Laboratory in Cape Town. Advanced in Assaying and General Analytical Chemistry, Food and Water Analysis. Also possesses good knowledge of Microscopy.—Address: D. C., c/o "S.A. Mining Journal," Box 418, Johannesburg.

Johannesburg Motor Garages and Suppliers of Motor Cars, Accessories, etc.

JUST ARRIVED—1912 MODELS

PHŒNIX AND VULCAN CARS

Trial Runs Arranged. Full Particulars from

REED'S GARAGE

GOVERNMENT SQUARE, JOHANNESBURG.
Phone 1434. P.O. Box 2720.

If its COMFORT and RELIABILITY you want,

—RIDE A—

BAT
MOTOR CYCLE

3½ H.P. £65. 6 H.P. £78 10s.
8 H.P. £82

AGENTS FOR:
Indian-Scott, Bat, New Hudson, Moto-Reve, Hazel Motors.

Send for FREE List

WILLIAMS, HUNT & CO.,
129, Commissioner Street, & Von Brandis Square.
Box 2437. 'Phone 3039.

→ 3 ←

FACTS REGARDING THE

TRANSVAAL

WORTH REMEMBERING.

1. The **TRANSVAAL** is producing over one-third of the World's Gold Output.
2. **TRANSVAAL** Mines have spent 24 millions sterling on machinery and plant.
3. The **"South African Mining Journal"** is the **Official Organ** of the **Mine Manager's Association.**

Dunlop Repair Shop

SEND YOUR TYRES FOR REPAIR OR RETREADING

TO THE

MANUFACTURERS.

DUNLOP GROOVED TREADS (manufactured in our English Factory) Fitted to any make of cover.

Burst Covers and Tubes properly repaired.

Call and inspect samples of our work.

Dunlop Repair Works,

83, BREE ST.,
JOHANNESBURG.
P.O. Box 6370.
'Phone 831.

First and Fastest "Hill Climbs" 1910.

First and Fastest "Hill Climbs" 1911.

VAUXHALL CARS.

Sole Agents:
T. B. ADAIR & CO.,
67, Kotze Street,
HILLBROW,
JOHANNESBURG.

Phone 2570.
P.O. Box 1940.

Automobile Notes.

The T.A.C. Programme.

A brief outline of the T.A.C. programme, as it will probably be carried out in the coming season, has been published in the local Press, but nothing authentic has, as yet, been disclosed by the Club Officials, and as the date of the first event, in the ordinary way, is still several months ahead it seems premature to discuss the competitions at this juncture. It is understood, however, that the events of the 1912 season will be along the lines of those in past years, with the addition of other competitions, which the presentation of new trophies has brought into being. The T.A.C. in the past have done much to bring the sport of motoring into prominence, and had their efforts met with the success they deserve there is no doubt that the pastime to-day would number many more adherents than is the case. The paucity of entries for many interesting competitions last season was subject for much comment, the lack of enthusiasm on the part of members being regrettable. This indifference reflects adversely on the Club as an organisation impeding the progress which is aimed at, whereas, on the other hand, were the energetic lead of the Committee followed with a genuine interest by the members, the needs of the Club, in regard to a proper racing track, etc., would long since have been realised, a condition of affairs alone made possible by the co-operation of the many members with the administration of the Club.

A Road to the Coast.

Some time ago the question of a through road from Johannesburg to the Coast was freely discussed in motoring and other circles, the possibilities of the scheme at the time being clearly put forward. While the benefits to be derived from such an undertaking are obvious, there is no denying the immensity of the proposition, which would call into operation the services of many municipalities and other bodies, unless the Government were disposed to exercise sole control of the project. At the present time it is quite possible to "get through" by motor car from Johannesburg to Durban, if the motorists be prepared to accept the difficulties which inseparably beset, in the form of bridgeless rivers, in many cases with boulder strewn beds, roads or tracks rutted on either side, with a mound formation between, sorely testing the best Colonial types of cars in point of clearance, and in addition the countless patches of deep sand, with alternate soft ground. Couple with the foregoing mountain slopes of varying steepness which have to be attempted, and one must conclude that under existing conditions the task of getting through would be a fairly formidable one. In view of the fact that a road to link up the Coast with Johannesburg, it is understood, will occupy the attention of Parliament next session; it may be interesting to briefly refer to a possible route, passing by the way through many important centres, a consideration, it is apparent, of much value. Starting from Johannesburg a fair road via Natal Spruit brings the motorist to Heidelberg, some 35 miles distant, from which place Standerton may be reached with due respect, however, to some bad spruits which will be encountered. Fifty miles further on lies Volksrust, the road en route being fairly rough but passable; from thence through Charlestown on to Newcastle the road, for some 30 miles past the Ingogo river with its sandy banks, is heavy and abounding in hills, and before Newcastle is reached the motorist will have made the acquaintance of many nasty drifts. Some eighty miles beyond lies Ladysmith over roads which in places fairly defy description; once reached, however, the running is fairly easy to Colenso; at which place the Tugela is crossed, by bridge. In order to arrive at Escourt some 27 miles further on, the motorist will be taxed severely owing to the state of the roads, which in each recurring rainy season suffer considerably by wash-a-ways. A bridge over the Bushman's River near here will be of valued assistance. Pietermaritzburg, 75 miles further on, in the direction of the coast is the next centre of importance on this route (via Mooi River and Howick), and can be attempted over roads in a much better condition than those between the various stages already traversed. Beyond this place the country is hilly, and it may be remarked very pretty; passing through Camperdown, a good road of some 30 miles, leads through the village of Pinetown; from thence to Durban the running is excellent, in fact from Maritzburg some 65 miles from the seaport this condition is maintained.

The State of the Roads.

While on the subject of roads one is reminded of the continuous effusions appearing in the Press which emanate from the after hours scribes in regard to the condition of

CONTINENTAL

THE WORLD'S LEADING TYRES.

FOR MOTOR CARS:

The Extra Heavy Square Tread Tyre;
The Tropical Renforcé Three Ribbed Tyre;
The Black Red Steel Studded, as used exclusively during the "Prince Henry Trophy" Race.

FOR MOTOR CYCLES:

The Extra Heavy Tyre, Ribbed Pattern;
The Rubber Studded, Non Slipping Tyre.

N.B.—All our Tyres are specially manufactured by our Home Company to suit the South African Climate and Roads, and stand UNSURPASSED in Quality.

STOCKS OBTAINABLE THROUGHOUT SOUTH AFRICA.

many streets in Johannesburg. There is admittedly room for much improvement even in the main thoroughfares, but due regard must be given to the fact that the progress which has converted the veld of two decades, and less, ago into modern highways, macadamized in the most finished manner regardless of cost, deserves more of respect and less of harping criticism. Grievances do exist in many new suburbs, and some ratepayers may be justified in airing same, but on an analysis of the situation it will be found that the motorists can lay more claim to complaint than those outside motoring circles, owing to the pot-holed nature of many streets, even in the central area, which business necessitates being traversed daily by some. The laying of pipes and other municipal work, entails much disruption of streets which is quite unavoidable, but the Council might see that holes in roads are levelled over even though such roads may be "earmarked" for macadamising and tarring. Because a certain road is to undergo these processes, say a month hence, permits no justification for the existence of spring-snapping holes which terrorise the motorist to such an extent. His grievance would perhaps be met were periodical attention given to the patching of roads by those responsible, which could be effected by drawing a section from the great army of those employed on construction, exclusively, for this particular work.

An Automobile Exhibition.

A reference to an exhibition of motors was made some time ago in these columns, when its advisability was emphasised. It is, therefore, interesting to lear that the S.A.S.M.T. have decided to arrange this event, with the permission of the Agricultural Society, and in connection with their Annual Show, next Easter. It may be remembered that one season the Agricultural Society were very eager to erect, and place indefinitely and exclusively at the disposal of the motor traders, an annexe to the then existing buildings, and that advantage was not taken of the offer at the time by the traders. The rapid progress, however, which has marked the motor industry since that time, warrants an exhibition on an extensive scale, and, this, the promoters of the industry fully realise. It is satisfactory to relate the question of finding suitable and adequate accommodation at the Agricultural Show Ground has been answered by the Society, and from all accounts a fairly representative exhibition of motor vehicles will contribute an additional interest to this annual event.

Street Accidents.

Many factors contribute to street accidents, in which motorists are sometimes unfortunately involved. Chief of these in regard to Johannesburg are the utter disregard of all street regulations by many coloured drivers; the carelessness of pedestrians, whom to avoid, drivers of vehicles have so often to deviate from a recognised course, and the ambiguous nature of signals given by some pointsmen whose duty it is to control the traffic. Perhaps it would be difficult to imagine any traffic more diverse or complex than that which characterises the commercial capital of South Africa, and in the great miscellany passing to and fro, from the standpoint of accidents, experience shows there is invariably an inclination on the part of most vehicle drivers to palliate to a certain extent the offences of most vehicle drivers, so long as the offending party is not a motorist. Why this state of affairs should exist, and motorists remain so unpopular requires some explanation, in a city in which so much that is modern has been introduced. The sooner, however, that the entire community reconcile themselves to the fact that the motor has come to stay, and to eventually supercede all other forms of locomotion, the better.

Springs and Shock Absorbers.

In the attempt to overcome the bumps and jars incidental to motoring over rough roads, many ingenious devices have from time to time been fitted to cars. Special spring suspensions afford a measure of protection, and shock absorbers of various kinds serve a useful purpose in reducing the shocks set up by road irregularities, but most manufacturers, who study Colonial requirements, now fit springs specially designed to reduce to a minimum the shocks peculiar to South African roads. Cars in the absence of provision of this nature deteriorate rapidly, apart from the uncomfortable feeling one experiences when motoring in being subjected to bumps and jars indefinitely through the countless road irregularities with which the country abounds.

Contracts Open

The Municipal Council of Johannesburg invites tenders for the Erection and Completion of Married Quarters and Workshops at the Central Fire Station, Jeppe Street, Johannesburg (Jan. 29).

The Municipal Council of Krugersdorp invite tenders for Continuous Current Ampere Hour Meters of the Mercury Type (Feb. 27).

The Benoni Municipality invite tenders for the Supply of Stationery (Jan. 25).

The Engineer-in-Chief, South African Railways, Johannesburg, invites tenders for the carrying out of certain Earthworks and Masonry on the first 10 miles of the Caledon-Kykodie Line, Cape Province, to be divided into four sections (Feb. 2).

The Chairman of the Tender Board, Attorney-General's Office, Pietermaritzburg, invites tenders for the Erection of Preparatory School, Durban (Feb. 12).

The Chairman of the Tender Board, Provincial Secretary's Office, Market Street, Pretoria, invites tenders for additions to School Builing at Volksrust, Transvaal Province (Feb. 9).

ANSWERS TO CORRESPONDENTS.

G. R. P.—The address in South Africa is Clocolan, O.F.S.

"Holder."—In liquidation—nothing for shareholders.

Nourse Mines Dividend.

The Directors of the Nourse Mines notify the declaration of an interim dividend of 10 per cent. (2s. per share) for the half-year ending January 31st, payable to shareholders registered on that date. Payment of the dividend will be made on or about March 6. The amount to be distributed is £82,782.

REID BROTHERS (Johannesburg) LIMITED
(INCORPORATED IN SCOTLAND).
P.O. Box 802. Telegraphic Address: "REEF."
Telephone Nos. { Office 96. Store 158.
OFFICES: Maxwell Buildings, Harrison Street.
STORES: {Commissioner St. (East), Johannesburg, and Main Reef Road, Denver,
IMPORTERS OF
Mining Material and Engineering Appliances.

THE SOUTH AFRICAN
Mining Journal,
WITH WHICH IS INCORPORATED
The South African Mines, Commerce and Industries.
ESTABLISHED 1891.

VOL. IX., PART II.] JANUARY 27, 1912. [No. 464.

HEAD OFFICE: 119-126 Exploration Building (3rd Floor).
Telephone **913.** P.O. Boxes **963** and **418.**
Cable and Telegraphic Address: " **MINING JOURNAL.**"

LONDON EDITOR: Percy Snowden.

MANAGER FOR GREAT BRITAIN: G. Leighton Hare, 119-120 London Wall, London, E.C., to whom all communications must be addressed.

GERMAN AGENTS: Dean-Mayer Co., Linkstrasse 39, Berlin, W., 9; Rudolf Mosse, Jerusalemer Strasse, 46-49 Berlin, S.W. 19; H. C. Wolff, Residenzplatz, M. 85. Kempten, Bavaria.

AMERICAN AGENTS: Gotham Advertising Company, 95 Liberty Street, New York.

Copies of this journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa. and at the London Office as above.

NOTICE.—The postage of this issue of the S.A. *Mining Journal* is: South Africa, 1d. All other parts, 2d.

CONTENTS.

PAGE
Notes and News 735
Topics of the Week:
Accidents on Rand Mines 737
The Life of a Mine 738
Prospecting on the North Rand Line 739
The Diaphragm Cone and Sand Filter Table... 740
Mines of the Witwatersrand.—VII.—Modder " B " ... 741
The State of the Diamond Market 744
Treatment of Accumulated Slimes 745
Financial Encouragement for the Prospector 746
The Year with the Wolhuter 747
Accidents in Transvaal Mines 748
Outside Districts 749
Obituary 749
Native Labour Shortage and the Mining Industry ... 750
Rhodesian Section:
Latest Mining News 751
Rhodesia Exploration Scheme 752
New Health Regulations in Rhodesia 753
Rhodesia Broken Hill 753
Correspondence and Discussion: " The Geology of the Witwatersrand," " Mooifontein Diamonds," " Johannesburg Consolidated Investment Co." ... 754
Measuring Air-Flow: Ferreira Deep Master-Meter ... 755
South Africa's Mineral Output 756
The Combustion of Coal.—II. 757
Ancient Mine Workings in the Transvaal 758
The Shape of a Shaft 759
The Week in the Sharemarket 761
Engineering Notes and News 763
Commerce and Industries 765
Automobile Notes 769
Company Meetings: Wolhuter, Randfontein Central, Langlaagte Estate, Randfontein Estates 773
Index to Advertisers.

Notes and News.

Mr. Reyersbach. We understand that Mr. L. Reyersbach has abandoned for the present, his intention of paying a visit to the Rand. It will be remembered that it was recently announced that Mr. Reyersbach was to visit South Africa in January for a short stay.

* * * *

Rhodesian Dividends. Amongst the satisfactory features to be noted in connection with Rhodesian mining during the past year special reference must be made to dividends. It is most gratifying to note that whilst efforts were largely concentrated on development work during the twelve months, the output has not been allowed to sag, and an increase is to be recorded in the amount of money distributed amongst shareholders. Excluding small syndicates, mining development and finance companies paid £954,613 in dividends, as against £883,000 in 1910, and approximately half a million sterling in 1909.

* * * *

Land Bank for Rhodesia. The British South Africa Company announces that the land bank, the establishment of which was foreshadowed in Lord Winchester's speech at the Rhodesian dinner in June last, was registered in Rhodesia on December 30, under the title of the " Rhodesia Land Bank, Limited." The capital of the new bank, amounting to £250,000, has been found by the British South Africa Company, and the board will consist of Mr. Robert Littlejohn (chairman), the Hon. Sir Lewis Michell, and Mr. Henry Birchenough, C.M.G.

* * * *

Coal and Base Metals. With the publication of figures as to mineral produce by the Government Mining Engineer's Department, it becomes possible to estimate the output of coal and base metals by Transvaal mines during 1911. In the first place, the coal output aggregated 4,343,860 tons, as compared with 4,118,869 tons in the 1910-1911 period. The output of tin ore was valued at £414,021, as against £396,343 in the 1910-1911 period. During 1911 copper of a value of £51,675 was produced, and Galena worth £344.

* * * *

Union Steel Corporation. The prospectus is published in our advertising columns of the Union Steel Corporation of South Africa, offering a hundred thousand 7 per cent. preferred ordinary shares of £1 each. The company possesses a valuable contract with the Union Government. The directors in England will be Mr. Patchett, chairman of the Shropshire Iron Company; Mr. Isaac Lewis, Mr. Frederick Siemens, Mr. Stanley Watson, and Mr. Henry Herbert, formerly of the African Banking Corporation. The directors in Johannesburg will be Mr. Samuel Marks and Mr. Henry Wright. Attention is drawn to an important report, signed by two leading engineering firms, setting forth the profit-earning possibilities of the scheme. The works will be at Vereeniging, and the country should certainly benefit from this notable addition to our local industrial enterprises.

* * * *

New Minister of Mines. Certain alterations have been made in the Union Cabinet. Mr. Malan will be the Minister of Mines vice General Smuts, Mr. Malan to hold this portfolio in addition to that of Education. Colonel Leuchars, Minister of Commerce and Industries, will also be Minister of Public Works vice Sir David Graaff. Matters concerning agricultural education and afforestation will be transferred from the Department of Education to that of the Department of Agriculture. To the office of Minister of Mines, Mr. Malan will, at any rate, bring an open mind, and, no doubt, a receptivity that may make up in some measure for his total lack of experience.

Activity in Diamonds. The high prices now obtaining for diamonds have stimulated interest in the search for mines and alluvial in many parts of the sub-continent, and it is interesting to observe that diamond mining men and diggers are busier to-day than they have been for years past. Not only are new prospects being opened up—as at Pniel Estate for instance—but propositions which engaged attention some considerable time ago are being taken up again. In the Pretoria district the farm Roodeplaats is being opened up again. Roodeplaats lies to the north-east of the Premier mine, and adjoins Kameelfontein and Leeuwfontein. In the past it did not yield any great rewards to those who prospected the farm, but we understand that a return of about 18½ carats of diamonds of very good quality has recently been obtained from one hundred loads of ground. In the Bloemhof district two or three properties which received attention in the past are being opened up again. We learn, too, of an interesting discovery in the Jacobsdal district on a farm named Van Niekerk's Plains.

* * * *

Randfontein Dividends. No dividend will be paid in respect of the past year by the Randfontein Estates Gold Mining Company or by the Randfontein Central Mine. Such a contingency had been feared. In 1909, it is pointed out, the Randfontein Estates issued £2,000,000 debentures for the purpose of providing funds to equip and develop the Randfontein Central Mine, which was thereupon proceeded with and completed last year at a cost of £1,900,000. The actual amount available of the debenture issue was £1,420,000, the difference of £580,000 being absorbed by repayment of a £193,000 loan to Sir Joseph Robinson, Bart., amalgamation expenses £44,000, debenture interest £169,000, and debenture issue expenses £174,000. The reason the Randfontein Central is not in a position to distribute a dividend is because of the heavy capital expenditure involved in the enlargement of the plant, etc., in order to reduce working costs. The total expenditure incurred was £2,077,000 and the cash available £1,420,000, so that, it being unfavourable for the raising of funds by the sale of the 500,000 reserve shares, there is a deficit of £657,000. To straighten out matters the profit of £860,000 earned during the year has to be utilised. The directors give the assurance that there will be a substantial dividend during the current year. The position should be improved considerably, they assert, with the equipment and development of the mine completed and a full complement of native labour in March.

* * * *

Langlaagte Estate Dividend. The directors of the Langlaagte Estate and Gold Mining Company, Limited, announce the payment of a dividend of 5 per cent. for the half-year ending December 31, making a total dividend of 15 per cent. for the year ending December 31. The gross profits for the year are £220,000, which, after deducing £45,000 for profits tax, ordinary capital expenditure and other charges, leaves a balance for distribution of £175,000, equal to 20 per cent. During the past year, however, £60,000 has been spent on equipment of Block B section and the erection of a filter press plant for treating accumulated slimes which expenditure would have been met by sale of reserve shares created for the purpose when the two companies were amalgamated. Owing to the depressed state of the market, it has been found impossible to realise those shares, which rendered it necessary to appropriate the sum named out of the current profits of the company, consequently the directors regret being obliged to pay reduced dividend. As a portion of the expenditure was incurred for the installation of additional plant for treating accumulated slimes from which substantial addition to the profits will be derived, and as labour conditions are now much more favourable than during the last half of the year, they anticipate that the profits will improve during the present year. In view of the gradual exhaustion of the Langlaagte Estate section, preparations for drawing the whole of the ore from the Block B mine are practically completed, and that mine, Mr. Langerman says, has an available tonnage of ore estimated to keep the full mill running for a further twenty-five years.

* * * *

Another Tin Discovery. Within the past few weeks a discovery of cassiterite has been made to the north-west of Pietersburg, in what is generally spoken of as the "Blaauwberg country." Some well-known Northern Transvaal people are understood to be interested in this discovery. The first samples obtained from the property were not very well reported on, but the results of more recent prospecting are unknown to us at present.

* * * *

Postponed Annual Meetings. The directors of practically all the leading mines of the Rand have now declared their intention to postpone their annual meetings in order to give shareholders oversea ample time to digest the annual reports and balance sheets. At the Wolhuter meeting, reported fully elsewhere in this issue, Mr. W. H. Dawe dealt with the matter, and showed conclusively that every effort was being made to meet the wishes of oversea shareholders. How the change will work out remains to be seen.

* * * *

The Tariff Question. It is understood that the report of the Commerce and Industries Commission to be laid before Parliament during the coming session is made up of a majority report and two minority reports. The first is signed by all the members except Messrs. W. A. Martin and Mackintosh. The last named presents a minority report supporting the existing tariff, and Mr. Martin likewise presents a separate report, in which he plumps for Free Trade. Naturally, the reports are awaited with considerable interest. In this connection we shall have a word to say in our next issue regarding the spirited plea for Free Trade made before the Agricultural Union at Pretoria this week by Mr. Ewald Esselen, K.C.

* * * *

Transvaal Chamber of Mines. The annual general meeting of members of the Transvaal Chamber of Mines will be held on Thursday, the 29th February, 1912, at 3 o'clock p.m., in the Council Room of the Chamber. Attention is called to article 34 of the Chamber's Constitution dealing with the election of the Executive Committee and the nomination of candidates, viz.: "The ordinary business of the Chamber shall be conducted by an Executive Committee consisting of sixteen members, to be elected by ballot by the representatives, as defined in articles 14 and 15, at each annual meeting; three of such Executive Committee members shall be elected, one as President and two as Vice-Presidents of the Chamber respectively, also by ballot by the representatives. At every annual meeting of the Chamber all the members of the Executive Committee shall retire, but shall be eligible for re-election. Candidates for election to the Executive Committee other than retiring members of that Committee, must be nominated in writing by a representative and such nomination must be placed in the hands of the secretary of the Chamber at least fourteen days prior to the date on which the election is to take place. Representatives shall be the only persons eligible as members of the Executive Committee." Agenda: (1) Report of the Executive Committee for the year 1911; (2) election of members of the Executive Committee; (3) election of President and two Vice-Presidents. The following are the members of the Executive Committee retiring, but eligible for re-election: Messrs. H. O'K. Webber (President), C. W. Villiers (Vice-President), H. C. Boyd (Vice-President), S. C. Black, D. Christopherson, W. Dalrymple, W. H. Dawe, M. G. Elkan, P. Ross Frames, J. G. Hamilton, M.V.O., G. W. Higgins, J. Jeppe, J. W. S. Langerman, J. Munro, G. Nathan, E. A. Wallers.

New Penwith, Ltd.

Operations on the ground of the New Penwith, Ltd., are mainly confined to the opening up of the quartzitic body carrying gold values which outcrops through this property and that of the West Rand Unified. Ore is being mined also, and stacked in readiness for the 20-stamp battery which is now in course of removal from Carver's claims, on the Black Reef, to the Penwith.

* * * *

Groenfontein Tin Mine.

Mining work on the pegmatite horizon in the Government lease area has been discontinued, but we understand that boring has been commenced in this block for the purpose of locating further deposits. The borehole referred to in our last issue is one of a number in the pegmatite zone on Groenfontein.

* * * *

Institution of Mining and Metallurgy.

The medals, etc., of the Institute of Mining and Metallurgy as awarded will be presented at the annual meeting in March, 1912. Gold medal of the Institution (two awards): (a) To Mr. E. P. Mathewson, M.Inst.M.M., general manager of the Anaconda Copper Company, Arizona, U.S.A., in recognition of his eminent services in the advancement of metallurgy generally and especially in regard to copper. (b) To Mr. Walter McDermott, M.Inst.M.M., in recognition of his special services in the equipment of the Bessemer Laboratory of the Royal School of Mines and as the representative of the Institution on the board of governors of the Imperial College of Science and Technology during the period of its establishment and organisation; and to signalise his services in the advancement of metallurgical practice. The Consolidated Gold Fields of South Africa, Ltd., gold medal goes to Mr. Walford R. Dowling, M.Inst.M.M., for his paper on "The Amalgamation of Gold in Banket Ore." The Consolidated Gold Fields of South Africa, Ltd., premium of 40 guineas goes to Mr. A. M. Finlayson, Assoc.Inst.M.M., for his paper on "Secondary Enrichment in the Copper Deposits of Huelva, Spain." The "William Frecheville" students' prize of 10 guineas goes to Mr. F. Percy Rolte, Assoc.Inst.M.M., for his paper on "Shrinkage Stoping in Western Australia." This award has been delayed owing to a misunderstanding in regard to the author's eligibility under the age limit. The "Arthur Claudet" students' prize of 10 guineas goes to Mr. Arthur C. Hoare, Stud.Inst.M.M., for his paper on "The Roasting of Complex Ores in Gold Assaying."

* * * *

Knights.

At Knights there was a considerable improvement in the grade of the ore sent to the mill in the quarter ended December 31 last, and, although working costs were higher, the total gross profit shows an increase of £12,110 as compared with that for the previous quarter. The higher working costs were due partly to the increased amount of waste sorted out, and partly to the smaller tonnage crushed. The amount of rock sent to the mill fell away considerably in December, owing to a reduction in the native labour complement. It is hoped to effect an improvement in the supply at an early date. The Vertical shaft was sunk 296 feet to a total depth of 941 feet. The change over from the temporary to the permanent steel headgear was accomplished during November, and this caused a temporary stoppage to sinking. The Northern Incline shaft was sunk 139 feet, and has reached a total depth of 772 feet. The shaft has reached a distance of 203 feet below the 13th level station. Active development operations are being carried on at the 13th level in this shaft, and reef of promising value has been exposed. Greater attention has also been paid to development in other sections of the mine, and the results obtained have been of a satisfactory nature. Dividend No. 15 of seventeen and one half per cent. (three shillings and sixpence per share) has been declared payable to shareholders registered at 30th December, 1911.

TOPICS OF THE WEEK.

ACCIDENTS IN RAND MINES.

Owing in no small measure to the encouragement given by the Government Mining Engineer, the question of fatal accidents on Rand mines has lately attracted considerable attention. It will be remembered that in a paper read before the Chemical, Mining and Metallurgical Society some time ago emphasis was laid on the abnormal rate of fatal accidents on these fields compared with that of other mining centres. The interest excited by that paper apparently induced the Librarian of the Mines Department to compile a comparative table of accident death rates of the chief countries of the world. This table appeared in the *Rand Daily Mail* last week, and we reproduce it in another part of this issue. A further stage in the discussion was marked last Saturday night when Mr. Chilton's paper came up for consideration at the monthly meeting of the Chemical, Mining and Metallurgical Society. Dr. Macaulay, M.L.A., and Messrs. J. E. Vaughan, Ries, and C. B. Saner made important contributions on the subject, and, though differing in diagnosing the cause, were unanimous in laying emphasis on the evil and the urgent need for reform. This week we print portion of Mr. Vaughan's paper, and in succeeding issues we hope to give the views of Dr. Macaulay and the other authors in detail. The spirit and sentiments that animate all these papers are admirable. There is throughout an impatience with the mining methods that can breed so high a percentage of fatal accidents, and a zealous desire to secure reform by every means. Care, however, must be taken to guard against accepting too readily all the statements which scientific gentlemen may find themselves moved to make, even before scientific societies, in the interests of so-called humanitarianism.

We hold no brief for the mines in the matter, but common fairness insists that certain facts should be pointed out. Mr. Chilton's paper is excellent as far as it goes, but it fails singularly to take into account the many qualifying facts, without which the whole truth is not revealed. Generalizations, of course, are always dangerous and sweeping assertions are seldom absolutely true. When we come to consider the actual statistics upon which the whole discussion is based, it is easy to prove their vulnerability. Indeed, in a letter sent to the Press on the day that Mr. Leyds' statistics appeared, Mr. Samuel Evans subjected them to a withering criticism. *Inter alia*, Mr. Evans wrote: "(1) In no other country in the world are accident statistics collected with such care and the mines subjected to such constant and close Government inspection as on the Rand. (2) I understand that in many countries accident returns are only made once a year and the mines are rarely, if ever, visited by Government Inspectors. (3) I believe I am right in saying that the Mines Department here class as a fatal mining accident any accident that directly or indirectly causes the death of the victim, either at the time of the accident or at any later period." To support this Mr. Evans quotes from an article dealing with this subject published in *Nature* of December 15, 1910, and written by that well-known authority, Professor Henry Louis. We give the whole passage from which Mr. Evans quotes:—

> "The publication of Colonial and foreign statistics in the present form was due to the initiative of the late Sir Herbert Le Neve Foster, to whom all interested in mineral statistics owe a deep debt of gratitude. No one, however, was more sensible than Le Neve Foster himself of the many shortcomings of this publication, as the writer of the present review can personally testify, and it is a matter of great regret that so little has yet been done to remedy some of the more glaring of the defects of this publication. It is not to be inferred that the removal of these defects is a simple or an easy matter, or even that it lies within the power of any one individual to accomplish it, for it is highly probable that nothing short of an international agreement amongst the great mineral-producing countries of the world can effect this end, even partially. Such a work as the present has for its main object the comparison of the mineral outputs of various nations, and of the conditions under which this output is obtained, mainly with reference to the labour engaged in its production and the relative danger of the miner's occupation. It is a truism that no real comparison is possible unless similar data are compared, and it is here that the main difficulty lies, the same terms being used in different countries with widely different meanings. To take a striking example, we find in the introduction a statement to the effect that

the death-rate from accidents in coal mines is as follows for the year 1908:—Per 1,000 persons employed: United Kingdom 1.32, British Empire 1.45, Austria 1.10, Belgium 1.07, France 0.95, Germany 2.46, United States 3.42, Foreign countries generally 2.34. This statement is given without comment or explanation, and leaves us to draw the obvious inference that coal mining in the United Kingdom is attended with considerably greater risk to the miner than is the case with our French and Belgian neighbours. To those who know the true facts, it is, however, by no means certain that this greater risk in this country is a real rather than an apparent one. It is a curious fact that in no country does legislation define what is meant by a fatal mining accident. In the United Kingdom our inspectors have adopted a working definition which answers all purposes, although devoid of legislative sanction, and class as a fatal accident any accident that directly cause the death of the victim within twelve months after the occurrence of the accident. In Belgium, however, only those accidents are considered fatal that directly cause death within thirty days of the accident, whilst in France, where no definition at all is attempted, an accident is only classed as a fatal accident if it causes directly the death of the victim, either on the spot or at any rate within a very short interval of time, whilst in Germany and Austria it would seem that for an accident to be classed as fatal it must directly cause immediate death. It is thus obvious that if the French or Belgian accident list were calculated upon the same basis as the British, the death rate in those countries might quite conceivably appear to be higher and not lower than our own. When the supreme importance of this matter is considered, and when it is remembered that every one of the countries concerned is engaged in discussing legislation to promote the greater safety of the miner, such legislation being not infrequently based upon the comparative degrees of safety as shown by the ratios of fatal accidents in the different countries, it is surely a pertinent question to ask whether it is impossible to agree upon an international definition of a fatal accident."

Clearly, as Mr. Evans says, statistics compiled under such varying conditions are not comparable. The only accident statistics which are recorded with the same thoroughness as ours are those published by Colonel Gorgas, the Chief Sanitary Officer of the Panama Canal. Here are his figures for the past four years, for which we are indebted to Mr. Evans:—

Death Rate from Violence of the Employees of the Isthmian Canal Commission.

	No.	Rate	No.	Rate
1908	12,383	6.38	31,507	3.52
1909	11,662	3.43	35,505	2.99
1910	13,021	4.22	37,781	3.23
1911.				
January	—	—	—	—
February	12,705	3.78	37,080	3.56
March	12,371	6.79	35,564	3.04
April	12,630	2.85	36,004	3.0
May	12,379	3.88	36,111	2.33
June	11,791	4.07	36,728	2.94
July	11,577	2.07	36,224	4.31
August	11,163	3.22	38,547	2.80
September	12,105	3.96	35,295	3.74
October	12,316	1.95	37,496	1.92

It will be seen that the Rand figures do not compare so badly with the only accident figures that can be accepted as accurate, especially in view of the fact that the canal figures reflect accidents under open working conditions. No one who knows the thoroughness and exactness with which statistics are collected by the Mines Department on the Rand, and the casual manner in which they are dealt with in other countries where mines are few and far between, but will question the fairness of any comparison instituted between the statistics. Indeed, in an appendix to his memorable report on the industry, Mr. Ross E. Browne dwells on this aspect of the Government's attitude towards the mines and almost suggests that mine managers might fairly lay some of the blame for accidents and other troubles on the bewildering multiplicity of regulations and statistical returns demanded by a too paternal Government.

It is clear, at any rate, that much of the eloquence of the papers recently read is wasted because the data upon which they are based are not correct. In matters of this kind mere guesswork, of course, is powerless to convince, and no amount of eloquence will make up for want of accuracy. Indeed, it might almost be urged that it is a waste of energy to devote so much attention to the number of deaths from accidents when the number of deaths from pneumonia each month is double as much. Here the industry itself has shown its good sense and grip of essentials by securing Sir Almroth Wright to check the mortality under this head. The death rate from accidents is undoubtedly bad, but deaths from other causes are worse, and even more urgently demand the attention of our experts, medical and mining.

THE LIFE OF A MINE.

"The question of the life of the mine is one which I approach with great diffidence, though I recognise that it is a question of the most vital importance to shareholders." In making this statement at the meeting of the Wolhuter Gold Mines, Ltd., last week, Mr. W. H. Dawe, the chairman, revived interest in a problem which has been a bone of contention between shareholders, boards of directors and consulting engineers for many years past. It is not unlikely that the little calculation made by Mr. Dawe will be quoted in future as a sample of the information that shareholders and the investing public are continually asking for, and very rarely obtaining. The matter has been discussed more than once in the columns of this journal, and we have invariably pointed out the practical impossibility of estimating the life of a mine, even on the Rand, where the essential factors of the calculation are supposed to be more accurately ascertainable than in any other gold mining field in the world. Mr. Dawe took care to show that the work of mining, and its period, therefore, are subject to many varying and unforeseen circumstances, and that although the Government insisted upon some sort of life estimate for the purpose of assessing the amounts properly due to amortization of capital before the profits tax was levied, the figure agreed upon between the parties concerned was purely arbitrary and would only be approximate to the actual life of the mine. The term arbitrary scarcely describes the estimate accurately, for the data made use of to arrive at it are obtained with great care and are supposed to be based on all the available evidence which has any material bearing on the calculation. Since the Government and the directors of mining companies are inclined to be biassed in different directions in the matter of the estimate, it is necessary to check it, and altogether it may be assumed that the life period agreed upon is as nearly reliable as it is possible to make it. In view of the fact that a variation in conditions may alter the basis of calculation to a considerable extent, provision is made by law for a periodical revision of the figures. Even although they are merely a rough approximation, they are of some value. They are of very much more value, at any rate, than the wild guesses that are only possible in the absence of such information as that afforded by Mr. Dawe. In most cases a minimum life estimate might safely be ventured upon for the benefit of shareholders, even if such fuller knowledge of the subject as was possessed by the board were thought too dangerous to be confided to unsophisticated shareholders. It is worthy of remark in connection with this approximate estimate of Mr. Dawe's that it has the approval of the consulting engineer, Mr. S. C. Thomson, who qualifies it by saying that "it is in exact proportion, assuming that the percentage of payable ore and reef widths will be the same in the undeveloped claims as has been the case in the ground worked." The chairman added: "Regarding 53·8 of the unworked claims which are in the deep level section, our information is more limited than that in connection with the central and western sections. But your consulting engineer considers the foregoing to be a fair estimate of the life, as, if there be any shortage in the tonnage to be obtained in the undeveloped sections, it would probably be made up from ore which has been classed as unpayable up to the present time. I have given this estimate because I wish to reply to the enquiries of shareholders as fully as possible, but at the same time I should like to again emphasise the fact that this estimate is based on results already obtained, and is subject to variation from the causes enumerated." This is a perfectly honest way of putting the case and one which no director or board of directors need shrink from following. If there are persons sufficiently unintelligent to misapprehend the precise degree of reliability which is to be attached to the estimate of the chairman of the Wolhuter, they have, of course, only themselves to blame. All of which leads to the belief, already expressed, that the circumstance will be looked upon as a precedent by shareholders and quoted with the object of inducing other boards of directors to be equally communicative.

PROSPECTING ON THE NORTH RAND LINE.

A Problem in Correlation—Rich Values in a Pebbly Seam—The Erratic Character of the Promise Beds.

Satisfactory results continue to be obtained in the workings opened up by Messrs. Waites and Macmillan on what is known as Skinner's Reef, upon the farm Witpoortje. Some time ago it was suggested in the *S.A. Mining Journal* that the reef under exploitation was probably that which goes by the name of the "Red Reef," or rather the southern reef of the Red Reef series. There is considerable difference of opinion with regard to the identity of the gold-bearing horizon, and it is scarcely to be surprised at, for what is called a reef is merely a narrow band of quartzite, upon the hanging surface of which are scattered a few sparse pebbles, the thin sheet of pebbly material constituting the richest portion of the gold-carrying material. Immediately above the pebbles—lying upon them in fact—is a narrow bed of shale, and below them a body of quartzite, the rock upon the surface of which, as already remarked, the pebbles lie. It is of a flaggy nature, however, and slabs of about three inches or so in thickness, containing the main gold deposit, appear to break off without much difficulty from the underlying mass. The shale above, especially that portion of it in close contact with the pebble layer, is fairly valuable, so that in mining the reef several inches of shale and quartzite along the contact plane are sent to be crushed.

It is doubtless a difficult matter to trace this gold-bearing contact over any great distance continuously, for a characteristic of the beds in the Promise series, as in others, is their tendency to vary in physical composition and appearance from point to point. It is claimed by those who know the line of country, however, that the Skinner Reef is traceable for some miles, and it is said that it has been worked upon on the Alexandra Estate. In Kassner's map the Red Reef series is distinctly marked as far as the boundary of Paardeplaats, and if the reef under discussion does not belong to the Red Reef series it cannot be very far distant from it. M. George Moreau, in his "Mines du Transvaal," published in 1906, says: "In open workings situated to the north-east of Witpoortje Station, on claims marked as Malcolmson's . . . . we took from a flake of reef from 1 inch to 1½ inches in thickness, two samples which gave from 20 to 120 ounces to the ton. But an accident limits the reef, which is cut off at about twenty metres in depth, and is continued in yellow sandstone as a fissure, in which we distinguished visible gold. This conglomerate is known as the Red Reef; and it only remains to be said that the prospect has been abandoned."

The difficulty of deciding as to the real position in the series of Messrs. Waites and Macmillan's reef will be understood from Dr. Mellor's description of the Promise Reef beds, quoted in our issue of the 6th inst., in which it is said that they are "a succession of beds showing comparatively rapid alternations as compared with the beds below (Hospital Hill series) from fine-grained and shaly to coarse and pebbly types, and also considerable variation when followed along the strike." It is not unlikely that this vacillating nature of the beds, from a physical point of view, is to some degree responsible for the alleged erratic character of the gold values in the same series. Writing of the Promise Reef itself, Dr. Mellor remarks: "The reef is usually a few inches in thickness, swelling out occasionally in places to nearly two feet, in others scarcely existent. Picked portions frequently give very good pannings of gold, and the horizon has been extensively prospected with disappointing results." How far these remarks apply to the extremely rich layer now being worked it is impossible to say. Only further exploration can give definite information on this point. It is interesting to learn, however, that the high values obtained have induced others to recommence prospecting in an already much-prospected neighbourhood. As has been mentioned before, several thousand tons of rock from this spot are said to have been sent to the Durban Roodepoort mill, in sacks, by the way, and to have paid handsomely for the work done. The operation was discontinued for some reason or another, but, it may be presumed, not on account of failing values, because there has been no difficulty in obtaining rich reef from the face at which the previous miners left off.

An interesting feature of the operations now being carried on is that all the ore taken from the working is being crushed by pestle and mortar, for the time being, and is treated, not by amalgamating and cyaniding, but entirely by a process of concentration in a hydraulic classification plant constructed for experimental purposes by Mr. Waites. He is naturally unwilling to enter into detail with regard to results at the present stage, but we understand that he is satisfied with the working of the apparatus as far as it goes.

It may be added, in conclusion, that the Witpoortje section, as surveyed by Dr. Mellor, and given by us in the issue above referred to, is to be found along a line about midway between Waites' and Macmillan's workings and the Witpoortje gorge. It is an interesting and useful line to follow, the more so as the character of most of the beds composing the section can be well studied in the adjoining ravine, where their outcrops are well exposed.

Witwatersrand Deep.

A borehole was put in on the 18th level for the purpose of locating the upthrown portion of the reef below the water dyke; the intersection of the reef was completed on the 23rd instant, the value obtained being 12·5 dwts. over 65 inches. A borehole was also put in on the 16th level, the value obtained being 10·1 dwts. over 51 inches. The pumping station on the 18th level was recovered in December, and additional pumps have been installed, bringing the total capacity of the pumping plant on the mine to three million gallons per diem, which it is expected will be sufficient to handle all the water. Development must necessarily be restricted for some months, as work on the 15th, 16th, 17th and 18th levels, on the upthrown portion of the reefs, can only be taken in hand as the water encountered in the crosscuts is drained off each level in turn. While these conditions continue milling operations will be hampered, although after the present month the profits should show some improvement. Whilst not minimising the seriousness of the water difficulty, the board wishes to point out that the inflow is well under control, and also that the reef, south of the water dyke, has been located on two levels, and at both points of intersection the values are very satisfactory. The ore reserves at the 31st December, 1911, as calculated and rechecked in the usual manner for the annual report, were 1,436,000 tons, of an average value of 6·79 dwts. over 48·8 inches.

Klipwal Pegging.

In respect of the proclaimed public diggings on the farm Klipwal No. 33 (Piet Retief district), the applicants for first issue licences must sign the application form in the presence of the magistrate, assistant magistrate or beacon inspector concerned, who, when satisfied as to the identity, age and competency of the applicants, will countersign the application form and return it to the applicant, who will be responsible for the forwarding of it with the requisite amount of licence money to the Mining Commissioner concerned.

THE DIAPHRAGM CONE AND SAND FILTER TABLE.

A New Application of the Cone Classifier—The Sand Filter Table at the City and Suburban—Gratifying Reports on Cone and Table Operations.

A NEW application has been made of the Caldecott diaphragm cone classifier at the Simmer and Jack, which illustrates the various uses to which this apparatus may be adapted. It will be remembered, no doubt, that in his paper on "The Amalgamation of Gold in Banket Ore" Mr. W. R. Dowling referred to the continued progress of heavy metallic particles through the tube mill circuit as a proof of the necessity of installing amalgamating tables below the tube mill discharge. "After the failure of various efforts to eliminate tube mill plates," he remarked, "it may now be accepted that there is general agreement amongst metallurgists as to the advisability of amalgamating the tube mill pulp, since otherwise considerable concentration of coarse gold by the classification of both stamp and tube mill pulp takes place in the tube mill circuit. Tube mill pulp has only to be examined for metallic iron from the wear of shoes and dies, and from other sources to illustrate how heavy particles will persist in the circuit till crushed or abraded fine enough to overflow the classifiers." The elimination of this worthless and troublesome material has naturally aroused the inventive instincts of mill-men for a long time past. The most effective method that would suggest itself, of course, is magnetic separation, the difficulty in the operation, however, being the convenient application of the principle. At the Simmer and Jack the problem has been solved by the use of the diaphragm cone. A large cone is installed, through which the whole of the mill and tube mill pulp passes. It is not set to give a very fine overflow, and the underflow is passed over the belt of a magnetic separator in such a way that all the metallic iron present is removed. The device is reported to have proved very successful, inasmuch as it withdraws large quantities of iron from the tube mill circuit which would, as Mr. Dowling points out, pass over the amalgamating tables time after time until it were fine enough to be carried over to the cyanide plant, where it would continue to be detrimental to the process of recovery. In our issue of July 1st last we gave a summary of the various advantages resulting from the use of the diaphragm cone classifier, and it will be admitted that this additional form of application is not only a valuable one in itself, but opens up a field of wider use in the same direction.

THE SAND FILTER TABLE.

The Caldecott sand filter table, which one is accustomed to think of in connection with diaphragm cones, on account of their use in conjunction, no doubt, continues to extend its sphere of usefulness. Among the mines where it has more recently been installed are the City and Suburban and the Princess Estate. The following official information with regard to its operation at the former mine is of interest:—Two 20 feet Caldecott tables, with the usual thickening cones, operating in conjunction with two tube mills, are now in regular use and are doing excellent work. Although capable of handling 550 tons per day, these tables are only called upon to deal with 450 tons on the present crushing basis, leaving ample margin for increased tonnage should circumstances require this. The superiority of this system over the old and somewhat primitive plant in use previously for the separate treatment of sand and concentrate, has immediately made itself felt. The finer grinding consequent upon tube milling, together with the clean slime-free sand obtainable for treatment from the Caldecott cones and tables, has resulted in a decrease of values going to the sand dump of 18d. to 20d. per ton of sand treated. The work done by the thickening cones, as combined classifiers and dewaterers, bears out the published results obtained elsewhere, the moisture in the underflow being reduced to about 28 per cent., with a further decrease to 18 per cent. on leaving the vacuum table. So far it is too early to estimate the cost of power and maintenance, but, judging from the way the plant is running at present, these should be light.

Groenfontein Tin Mine.

The following is a summary of the operations from June 30, 1911, to September 30, 1911:—No. of Lenses worked on, 19; total footage (including development), 1,220 feet; ore crushed (tons of 2,000 lbs.), 3,239 tons; cost per ton of ore crushed (2,000 lbs.), £2 10s. 1d.; concentrates produced (tons of 2,240 lbs.), 71·95 tons; cost per ton of concentrates produced, £112 16s. 3d.; average value of concentrates, 66·24 tin; estimated value, £7,214 2s. 11d.; working expenditure, £8,116 16s. 11d.; estimated loss for the quarter ended 30th September, 1911, £902 14s. 0d.; capital expenditure, 1st July to 30th September, 1911, £8,832 0s. 3d.; capital account at 30th September, 1911 (including plantation, £1,616 3s. 5d.), £36,174 15s. 4d. The work during the last quarter has resulted in a loss, owing to the failure of a large number of working faces to maintain their values. Through the depletion of the ore reserves it has not been found feasible to keep the mill running satisfactorily. Arrangements have now been made, as mentioned above, to let the mill for the purpose of crushing ore from the Zaaiplaats Lease temporarily. The opportunity is being taken to push development on Groenfontein and to endeavour to find new working faces with a view to establishing a satisfactory ore reserve before recommencing milling operations. The hydraulicing of the mill has so far only been conducted spasmodically owing to the faulty nature of the pipes supplied. This defect is being remedied, and it is hoped that in a few weeks from now the pumps will be in constant use, when the search for new tin-bearing deposits will be greatly facilitated.

Messina Copper.

During December the mill of the Messina (Transvaal) Development Company ran 11·5 days, treating 632 tons of ore, obtained from development work only, producing 90·91 tons of concentrates, having an assay value of 50·7 per cent., and also 62 tons of middlings, assay value 16·2 per cent. The development footage was 355 feet. The low footage is due to scarcity of native labour. On 3rd level, east drive averages 18·5 per cent. for a distance of 15 feet. Winze from 4th to 5th level averages 10 per cent. for a distance of 80 feet. On 6th level, east drive averages 14·8 per cent. for a distance of 25 feet. On 8th level, west drive averages 5·3 per cent. for a distance of 20 feet. All assays are over a width of 5 feet.

S.A. Oil Syndicate.

In connection with the South African Oil Syndicate, about to be registered with limited liability under the Companies' Act, the following gentlemen have consented to join the board of directors: Messrs. J. W. Badcock, Colonel Cuming, C.B., E. H. Cotton, C. E. Geard, and L. Richardson, all of Port Elizabeth. It is intended, as soon as the registration preliminaries are concluded, to transfer the office and secretaryship to Port Elizabeth, whence the whole management of the syndicate will be directed. Intending subscribers are advised to send in their applications for shares as soon as possible, and allotments will be made in order of date and application. Lists will close at the end of January, or earlier should the full amount have been subscribed prior to that date.

Mines of the Witwatersrand.

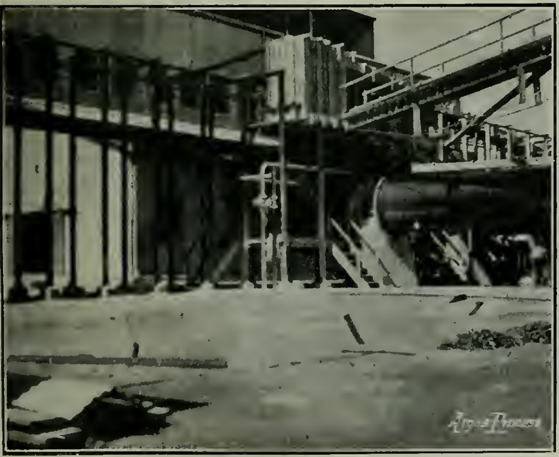
VII.—MODDERFONTEIN "B" GOLD MINES.

Interesting Underground Work—Novel Development Policy—Condition of the Mine—A Model Plant—The Company's Prospects.

SIXTEEN and a half years have elapsed since first the property of what is to-day known as Modderfontein "B" Gold Mines, Ltd., was registered in South Africa as Modderfontein Extension, Ltd. Crushing operations were commenced on the property at the end of September last. It may seem that an unduly long period has intervened between the dates of flotation and initial milling; but, apart from the general disorganisation of the mining industry during three years ot war and from the resultant political and industrial chaos which necessitated the concentration of money, talent and labour on the more central portions of the Rand, there are certain peculiar circumstances connected with the Modder "B" Company which explain its absence from the list of producing mines until just recently.

REEF CHARACTERISTICS.

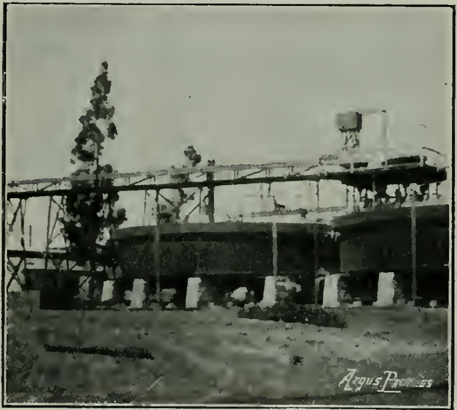
Although the reef in no part of the property lies at a greater depth than 1,500 feet, the banket itself (with the exception of one or two small patches) is overlaid with secondary measures of Karroo age. The Modder "B" is not, therefore, an outcrop proposition, although it will never have to operate at a great depth. The outstanding feature of the property is that the reef in this section of the Rand is abnormally flat—the average dip being in the neighbourhood of 14 degrees. The distance of the property from the central section of the fields, the unsatisfactory labour position and difficulty experienced in raising fresh funds during certain periods of Modder Extension's existence further tended to defer the date of milling. The reef in the property is comparatively thin, the average width as disclosed by development to date being in the neighbourhood of 13 inches. In this connection a few development figures may be quoted. In the seven months ended with December, 1909, 9,049 feet were driven, etc., and the footage on reef amounted to 4,265 feet. The average reef width disclosed was 14 inches and the value 22·3 dwts. During the year ended December 31, 1910, of the 24,636 feet driven, etc., 11,295 feet were on the reef, an average width of 11·83 inches, and value of 32·71 dwts. were disclosed. During the first three quarters of last year results were:—



MODDERFONTEIN "B" GOLD MINES: PORTION OF THE TUBE MILL EQUIPMENT.

Quarter.	Feet.	Width. Inches.	Value. Dwts.
March	3,846	11·0	22·9
June	2,672	11·5	32·9
September	912	18·0	28·0

The Modder "B" reef appears, therefore, to be of high grade value and of rather erratic width, sometimes contracting and in other places widening out. Estimating values on an inch dwt. basis, it is interesting to note that the development carried out during 1909 disclosed a value of 312 inch dwts., that of 1910, 387 inch dwts., whilst during the quarter ended September 30, 1911, the disclosure was 504 inch dwts.



MODDERFONTEIN "B" GOLD MINES: A PORTION OF THE TREATMENT PLANT.

THE COMPANY'S HISTORY IN BRIEF.

Before proceeding further with this article, it will be advisable briefly to recapitulate the outstanding features in the company's history. Some years ago indecisive prospecting work was carried out on the Modderfontein Extension's area, these spasmodic operations extending over a considerable period. In 1905 two shafts were put down by Mr. C. B. Saner, but in 1906 the company's funds were exhausted and all operations stopped. The real history of this important section of the further East Rand may be said to date from 1908, in which year the concern was reconstructed, a large amount of working capital was provided, the Modderfontein Extension and Modderfontein Restante claims were absorbed, and the Modder "B" Gold Mines, with an issued capital of £700,000 and a mining area equivalent to 1,467 claims (1,400 reef-bearing) resulted. For this large property possessed of 13,000 feet of reef strike a decisive policy was initiated, largely, no doubt, because of the very encouraging results secured in the New Modderfontein mine. With a view to defining the development programme, boreholes were sunk, old prospecting shafts reopened and the sectional exploitation of the claims was prosecuted by means of a series of shafts. The numerous shafts sunk on the property have been of great value in the preliminary development of the mine, and they will also, of course, play an important part in the ventilation of the underground workings, but as hauling ways they will be of little account, as the main shaft is designed to deal with all ore, men and tools.

A Novel Development Scheme.

The policy adopted for the opening up of this mine, which has been successfully carried out under the superintendence of Mr. H. Stuart Martin, the company's consulting engineer, is different in several essential particulars to general mining practice on these fields. The main features to be taken cognisance of at the Modder " B " are:—(1) The main central shaft, which is designed to handle all the requirements for the 80 stamp mill and such extensions to this mill as may in future be carried out. This shaft has five compartments, and all ore drawn from the different points in the mine will be concentrated at the main shaft ore bins. (2) Development of large blocks of ground, the blocks opened up being 800 feet by 1,000 feet in size. (3) The driving of a main haulage level throughout the mine. A closer examination of these three important details in the Modder " B " Company's property is now called for. The main central shaft has been sunk to a depth of 780 feet. It is equipped with a substantial steel headgear and 1,100 horse-power electric hoist, fitted with single drum—a type of engine which, we believe, is now finding great favour in the large British coal and iron mining districts.

Large Blocks of Ground Exploited.

The policy of opening up large blocks of ground was decided on after a very full and careful study of local conditions, and the development of adjacent properties. As a result of this it was anticipated that values might be erratic, and it was accordingly deemed inadvisable to open up this section in small blocks at the risk of spending a considerable portion of funds in developing unprofitable ground. The correctness of this view was demonstrated by meeting with a large area of very poor ground in the immediate neighbourhood of the central shaft, but a bold policy was adhered to, drives were extended and the ore reserve position of the company, according to Mr. Schumacher, who presided at the annual meeting in March last, was as follows at the end of 1909:—" The large total of 2,788,000 tons of reef has been blocked out, of an average value of 7 dwts. over an estimated stoping width of 48 inches. This represents the payable tonnage exposed, though some secondary development work will be necessary before the whole of it will be available for stoping. There are, in addition, a little over 600,000 tons of an estimated average value of 3·4 dwts. over a stoping width of 48 inches, which are, at present, not classed as payable reserves. The ore that has been exposed is in blocks of large size, measuring approximately 800 feet by 1,000 feet, and it is most satisfactory to be able to record that, so far, comparatively little unpayable ore has been encountered. With these large blocks it is not possible to determine the grade of the ore as accurately as would be the case if the management had adhered to the more conservative method of keeping the levels only 200 or 300 feet apart, but there is reason to believe that the estimates that we have framed on the basis of the information at our disposal will prove approximately correct. The justification for having worked on the big lines recommended by Mr. Stuart Martin, our consulting engineer, will lie in the results achieved. So far we point to the extensive and cheap work we have done. The payable ore reserves of the Modderfontein " B " stood, at the end of last year, at 2,788,000 tons, as I have already stated, and there were then by lineal measurement of both sides of the winze connections 11,000 feet of stope face ready for attack. To-day we have approximately 3,000,000 payable tons of ore blocked out; and this figure is, if we exclude the Witwatersrand area, equal to well over half of the total payable development of all the other gold mines in South Africa and Rhodesia put together." We have been unable to obtain figures relative to " ore reserves " at this date, or at the ending of the different quarters in 1911. During last year but little was done to further block out ore, the development footages being mainly on account of haulage levels, crosscuts, etc. We understand that the ore blocked out—it cannot be termed ore in reserve in the sense in which the term " ore reserves " is generally applied to the Rand—is being recalculated for the next annual report.

Further Underground Features.

The main haulage level is at a vertical depth of about 650 feet, and is the second level in the mine. The greater part of the development work carried out in the Modder " B " to date has been in the western section of the property—that is adjacent to the New Modderfontein Company's ground. It may be recalled that in the eastern portion of that property operations from No. 12 shaft disclosed good ground in depth, and apparently the Modder " B " operations have indicated an extension of this zone in an easterly direction. The main haulage level has been driven 4,500 feet west of the main central shaft, and to within about 2,000 feet of the western boundary. East of the main shaft the drive has progressed about 1,500 feet. This main haulage drive is 10 feet by 8 feet where the track is single, and 16 feet by 8 feet where double track has been installed. The drive was advanced at an average rate of 309 feet per month, Ingersoll drills being employed. This main haulage level has obviated the sinking of two large vertical shafts east and west, and has therefore resulted in a large capital saving to the company. As against this, it has been readily appreciated that, on account of the long distance ore has to be trammed underground, transportation charges will be high. With a view to facilitating matters in this direction, mechanical and animal transport has been adopted. Commodious stables have been installed to the west of the main shaft, and a number of ponies are employed on hauling the trucks. In addition, rope haulage has been installed. As further development of the mine proceeds and lower levels are opened up it may be necessary to establish another main haulage road below the second level. But this is a consideration of the future, the existing road should suffice for some time to come.

State of the Mine.

Reports have recently been current as to the unsatisfactory nature of the Modder " B " underground workings, and we therefore hasten to contradict certain alarmist rumours which have been floating around. Possibly these have been lent credence to by the fact that already substantial waste packs are being built up in the mine. As a matter of fact, it has all along been recognised that the Modder " B " would prove a " heavy " mine; with such a flat dip of reef it is only natural that the crushing strain and weight of superincumbent strata should be greater than where a higher angle of dip prevails. It has been observed that the " hanging " is moving somewhat, but this at present gives cause for no anxiety. As a matter of fact it is regarded by many experienced mining men as a favourable sign rather than an indication of danger, having regard to the fact that the waste packs are estimated to be strong enough to support any really serious stratigraphical weakness in so far as the present state of development is concerned.

A Most Modern Plant.

The equipment of the Modder " B " mine is modern in every particular, in fact no expense appears to have been spared to render it the last word in Rand mining and metallurgy. On visiting the property one is struck by the large area over which the plant extends. Clearly it has been laid out with a view to future expansion. The present milling installation consists of 80 stamps, each of 1,650 lbs. weight, and five tube mills. Provision has been made for the erection of a further 80 heads at the back of the existing mill, provided the future development of the mine warrants this, and still further expansion can be effected. The whole plant was originally designed on a possible and ultimate 120,000 tons per month basis, and this was subsequently divided into four units. Of these but one is at present erected and in operation. Extensions will, of course, be contingent on the manner in which the mine opens up.

There are no plates in the battery, all the operations of actual recovery being concentrated in the cyanide works extractor house, where the stationary amalgamated plates are located. The treatment plant includes such modern-day appliances and methods as classification cones, zinc dust precipitation, Merrill presses, Butters' filters and Brown agitators. The sorting arrangements are very complete, and include a return belt "picking" plant—the belt, by the way, shows remarkable signs of heavy wear and tear for the short period this installation has been at work. A certain amount of sorting is carried out underground, and approximately a further 11 per cent. is eliminated at surface. The surface plant includes a 265-drill Bellis & Morcom electrically operated air compressor, which is not at present in operation, as the supply of current from the Victoria Falls and Transvaal Power Company is awaited.

Working Results.

Normal working operations have scarcely yet been attained. In a plant of the magnitude of the Modder "B" installation some considerable time must necessarily elapse before the mine is running on a properly adjusted basis. Moreover, the company is more than 1,000 natives short of the required complement. Operations declared in respect of December resulted in the recovery of 12,355 fine ounces from 30,600 tons milled, the working costs being estimated at 19s. 4d. per ton, and the profit at £22,340. In addition, gold to the value of £4,823 was added to reserve, the amount under this heading at the end of the year amounting to £15,558. In view of the risk incurred in the estimation of values and control of the average yield by reason of the adoption of the policy of development in vogue at the mine, the building up of a substantial reserve, whereby the output may be regulated, is deemed advisable. Such a device is not, however, in keeping with the views of large European shareholders, as expressed at a meeting held the other day in London in connection with the East Rand Proprietary Mines' affair. But having regard to the peculiar circumstances of Modderfontein "B" Mines, the gold reserve policy, if it is to be tolerated in any form whatever and at any mine, might well be pursued by the company under consideration. Mr. Stuart Martin, it may be recalled, wrote in his last annual report: "Samples taken on the periphery of these large blocks of ore only represent the average value in an approximate degree, and therefore allowances have been made when valuing the ore reserves. It is probable that some blocks we class as payable may contain patches of unpayable ore, a great part of which may necessarily have to be mined; and, on the other hand, secondary development, to further prove blocks that show poor values round the periphery, may have to be done at a later date in order not to miss patches of payable ore."

Modderfontein "B" Gold Mines: The 80-Stamp Mill.

Finance.

The balance sheet presented to shareholders at the last annual general meeting—held on March 31, 1911—showed that at the close of 1910 the working capital on hand was £61,032 13s., exclusive of the proceeds derived from the disposal of the reserve shares. These brought in an additional £237,500. At the end of June last the cash on hand and at bankers amounted to £97,444 12s. 1d., and liabilities to £51,609 2s. 5d., thus leaving £45,835 9s. 8d. During the first three quarters of the year expenditure on capital account was as under: March, £56,288 5s.; June, £99,005 14s. 5d.; September, £239,139 2s. 5d. (this sum includes mine and head office general expenses from inception of the company, which were distributed over construction items); total, £394,433 1s. 10d. The report for the quarter ended December has not yet been published, and we are therefore unable to give figures as to capital expenditure incurred during October, November and December. At the end of September there was a debit balance of £133,917 13s. 3d. Mr. R. W. Schumacher, the chairman, presiding at the annual meeting, remarked on the question of finance: "Our cash resources have been strengthened by the exercise of the option over 95,000 shares at 50s. each last January. This gave us an additional £237,500, and brought the issued capital of the company up to £700,000. We estimate that by

Modderfontein "B" Gold Mines: The Central Shaft.

the time the plant has been completed and the mine starts crushing, we shall have incurred a small debt, and the profits that the mine will earn during the first months will be used to repay this. After that, the road will be clear for the distribution of working profits to shareholders."

"Life" and General Prospects.

It is a dangerous practice to hazard calculations as to the "life" of Rand mines, and especially as to the life of a large property such as the Modderfontein "B," where, on account of the peculiar method of development adopted the average gold contents of the reef are difficult to calculate, and where because of the large ore contents of the proposition any material increase or decrease in working expenditure may transfer millions of tons of ore from one side of the profitable and unprofitable ore reserve ledger to the other It seems, however, fairly safe to estimate that the company will have 1,100 net reef claims (after making a liberal allowance for faulted ground). By pursuing the system of packing with waste, few pillars may be required unless special precautionary measures are adopted to ensure the safe condition of the mine underground (measures which we must confess appear to us necessary). Assuming an average dip of 14 degrees and a stoping width of 48 inches, the average ore contents may be estimated at 22,000 tons per claim. On 1,100 claims this represents a total tonnage of 24,200,000 tons, and assuming all this to be of profitable value the "life" of the mine on its present milling basis would approximate to 67 years. Unless, however, the proposition becomes a great disappointment (and there are no reasons to justify such an anticipation at present) one can estimate with confidence that the reduction and treatment plants will be increased to at least double their present capacity (about 360,000 tons per annum) with a consequent diminution in 'life.'' Provided the mine continues to open up satisfactorily, one can calculate on an even greater plant than that indicated above being at work before many years have elapsed, and there will be a further increase in the rate of exhaustion. Of the dividend earning possibilities of the mine in so far as any period which exceeds the next few years are concerned, we prefer to say nothing at this juncture. The mine unquestionably appears to be opening up well at present, and the scheme of development adopted has many points in its favour. The Modder "B" is, however, somewhat of an unusual undertaking on the Witwatersrand, and but a fraction of the mining area—merely a portion of the western section—has to this date been exploited. We shall await the future results of the company and the complete justification of the policy of development inaugurated there with a large amount of interest and a not inconsiderable measure of confidence.

THE STATE OF THE DIAMOND MARKET.

Big Increase of Orders—"River" Stones in Demand—The Diamond Syndicate Reports Good Business—Position of the Diamond Cutting Industry.

According to the latest advices, the Diamond Market has commenced the new year with an increased influx of orders. It is stated on good authority that the Diamond Syndicate within the past few days have disposed of the Bultfontein production for November. For their own protection, diamond mining companies must always retain a certain number of stones in stock; the fact that the output of the Bultfontein mine for November is now in the hands of dealers is close selling, and is a pretty clear indication of the state of business. Inquiries, however, are not confined to Bultfontein goods, which are of only medium quality; the market is showing a keen desire to acquire the production of the De Beers, Kimberley, and Dutoitspan mines. Activity is not confined to the channels through which the Diamond Syndicate deals, nor to syndicated stones. The outside firms have also commenced to transact a considerable business, especially in what are known as "river" goods. The production of those companies not yet controlled by the great corporation is also passing through the hands of the firms mentioned. Business, in fact, is in such capital fettle that, as a result of careful inquiries prosecuted in all the important diamond quarters, the opinion expressed in previous articles that the future of the diamond trade is an assured one can be confidently reasserted. There seems every possibility, therefore, of prices going higher during the next few weeks, as the demand greatly exceeds the supply. The existing state of affairs is already beginning to make itself felt in the diamond share market. During the past few days the shares of the three big concerns, De Beers, Premier, and Jagersfontein, have advanced considerably as a result of good buying by insiders, and the impression prevails that the movement has not yet reached its limit. The *Financial News* has ascertained through special agents what is the state of the stocks held by cutters and dealers in brilliants: these stocks are said to be infinitesimal, having suffered depletion through the activities of recent months. All the important cutters, in fact, are open for big business.

Diamond Cutting.

From Amsterdam it is reported that the diamond trade is very slack for the time being. Judging by the number of unemployed, it might be thought that the situation is very bad at present. After having been as low as between 50 and 100 a week, the number of unemployed has risen to a somewhat alarming extent in the past few months. By December 15 it had reached 990, and towards the close of the year it even rose as high as 1,150, or more than 11 per cent. of the total members of the trade union. As there are, moreover, a number of workmen who are outside the trade union, the real percentage of unemployed is still higher than the above figure would seem to indicate. Nevertheless, views as to the future are not pessimistic, it being held that the present lull is only due to the usual dulness towards the end of the year. This confidence is reflected in the way in which the raw diamonds are still being competed for in the London market. As to Antwerp, the situation created by the recent failures has not yet cleared up. Two more Antwerp firms, which are doing a regular large business with America, have come into difficulties. One of these has been able to make a private arrangement with its creditors. The other, which has about 800,000f. of liabilities, made an offer to pay 10 per cent. of its debts, which so far has not been accepted. Only two Amsterdam firms are involved in this matter for small amounts, namely, 13,000f. and 23,000f. respectively. In view of the depression which is still going on in Antwerp, the syndicate for the German diamonds has resolved not to give new "sights" for some weeks to come, which means that the next sale of German diamonds will be postponed for some weeks.

The Utilization of Tin Scrap.

The utilisation of old tin cans by detinning at the works of the London Electrical Works Co., Ltd., appears to have attained the figure of 20,000 tons per annum. The process consists in unloading the cans on a shaking conveyer, which frees them from readily detachable dirt. This is also used as a picking belt, only tinned scrap being allowed to enter the works. The cans then go through a series of drums, in which they are crushed, perforated and heated. In the last all extraneous matter, including solder, is removed. The cans are then pressed into briquets ready for the detinning process. So far, in the United States, conditions of distance and of wages have operated to render detinning of old cans more or less unprofitable, unless the new dry chlorine process has furnished what has long been hoped for: A process so good as to overcome these inherent disadvantages and give us a new industry which can still support highly paid labour.

TREATMENT OF ACCUMULATED SLIMES.

Modified Process on the Black Reef—Some Interesting Features.

[By William Bettel.]

In the course of an investigation into the causes of unsatisfactory running of the Orion Slimes Plant on the Black Reef, working on once treated accumulated slimes, some interesting features were brought to light, which have a scientific as well as a technical interest. The original slimes were rich, and left a residue assaying approximately 3 dwts. gold per ton. These in course of years have become oxidised, the "cyanicides" formed being free sulphuric acid, ferrous sulphate, and ferric sulphates—acid and basic—of uncertain composition, with varying but small amounts of copper sulphate. The causes of poor extraction seemed to be the lack of attention to certain details, coupled with a plant more suitable to the treatment of ordinary accumulated battery slimes (from Rand ore), free from sands, than for Black Reef slimes. One of the physical characteristics of Black Reef slimes seems to be their contents of slimed pyrites, causing the slimes to pack rather badly on standing. In fact, a tank of acid slimes which had settled for 10 days could not be removed except by shovels (no hydraulic appliances being available). In outline, the method adopted as being the most suitable for the existing plant is as follows: 1. Disintegration in "puddler" in a stream of water. 2. Settlement of sands and coarse particles in pits. 3. Settlement of slimes (continuous flow) with overflow of "acid" water. 4. Decantation of acid water to surface of slimes. 5. Re-washing of slimes with clean water, re-settling and decantation of acid water, in cases of very acid batches of slimes. 5. Oxidation of ferrous sulphate by permanganate. 7. Neutralisation of free acid and acid and basic ferric salts with lime, and a little caustic soda to complete the decomposition of the basic salts. 8. Addition of cyanide and lead acetate to the pulp after all ferrous sulphate has been oxidised. 9. As perfect an agitation and aeration as is possible with the plant.

The remainder of the operations are the usual ones of transference of settled pulp (after decantation of the strong solution), with precipitated solution after circulation. The once washed pulp, after decantation of the first wash, is again treated by circulation and transference, the tanks being filled to their utmost capacity so as to give the maximum amount of solution per ton of dry slime. Arrangements are now being made for the passage of all gold-bearing solutions through the zinc boxes. Assays of washed pulp, after each treatment, showed the progressive extraction of the gold, the pulp after the first "wash" retaining 0·9 dwt. insoluble gold. After a second "wash" the insoluble gold was 0·3 dwt. Previous residues (obtained during the unsatisfactory working of the plant) assayed 2·00 to 2·15 dwt. insoluble gold, while the extraction of gold from solution in the zinc boxes was very imperfect, only 24·9 per cent. recovery being obtained, according to assay, just before a clean-up. The zinc in the extractor boxes, after being brought into an active condition, acted perfectly, giving, even after fifteen days' run, practically complete extraction. The last two assays (on solution from final "wash" containing 0·3 dwt. gold per ton) gave unweighable amounts of gold on 20 assay tons each of the precipitated solution.

The zinc boxes being in good order, the method of treatment was systematised. As no two charges were exactly alike, determinations of the amount of permanganate required for each charge were performed, the assumption being made that for every ton of pulp (dry) there was one ton of acid water containing ferrous sulphate requiring oxidation by permanganate, the manganese being left in the form of insoluble hydrated di-oxide (for obvious reasons).

$$6\ FeSO_4 + K_2Mn_2O_8 = K_2SO_4 + Fe_6S_5O_{24} + 2\ MnO_2$$

(The empirical formula, $Fe_6S_5O_{24}$, represents various basic salts formed from $3\ Fe_2O_3 + 5\ SO_3$).

The reactions representing the decomposition of basic salts may be condensed into

$$SO_3 + CaO = CaSO_4$$
$$SO_3 + Na_2O = Na_2SO_4$$

(water being omitted).

After all the ferrous salts were oxidised, cyanide solution, and extra cyanide to make up the strength of the final solution to 0·02 per cent. KCy (the final alkalinity being about ·004 to ·005 per cent., occasionally higher) was added, and the pulp circulated (over a tower) for six hours. The extreme difficulty of keeping the heavier pyritic slime thoroughly agitated with the bulk of the pulp by the means available causes the settled pulp to be high in insoluble gold, only about 55-60 per cent. of the gold being obtained in this first treatment. (In the laboratory one obtains about 88-90 per cent. of the total gold in one operation; the same result would be obtained by an efficient agitator of the "Brown" or "Paterson" type—not available on this plant.)

The cause of the actual consumption of the cyanide, as shown by analysis of solutions, is traced to pyritic matter, mainly carcasite, with small quantities of copper minerals associated with arsenical pyrites. The presence of these minerals necessitates the use of lead acetate in the ore treatment.

When the weak cyanide solution gets saturated with copper, provided sufficient ferrocyanides are present, the liquid becomes red and turbid with precipitating cupric ferrocyanide, associated with more or less zinc ferrocyanide. One can obtain a prefect precipitation of gold while only half the copper is precipitated. Alkaline ferricyanides present in the cyanide solutions entering the extractor boxes become converted, by reduction, into ferrocyanides. The precipitated solution, after aeration, frequently assumes a pink tint, due to precipitation of copper ferrocyanide, etc., and this settles in the sump.

By a suitable fluxing of the washed and calcined precipitate obtained on dissolving the zinc at the clean-up, the bulk of the copper can be retained as a copper-iron-lead matte; if the "white precipitate" is smelted with the richer slime a leady bar is obtained. By use of liners there is no difficulty in obtaining a decent bar in the smelt after clean-up. If desired, copper in the metallic form may be removed from the precipitate (after solution of the zinc) by taking advantage of the action of oxidants on copper in presense of sulphuric acid:—

$$Cu + H_2SO_4 + O = H_2O + CuSO_4$$

This treatment does not remove copper existing as ferrocyanide. For safety the acid solutions may be passed over scrap iron or zinc, or be treated with zinc fume and allowed to settle, the finely divided copper formed carrying down any gold entering solution.

Western Transvaal Diamond Diggings.

The Mooifontein correspondent of the Klerksdorp paper says:—It has been rumoured that a 50-carat diamond had been found on No. 2 Area on Friday, but I cannot vouch for the correctness. The news from London is very meagre, few people coming over, and those few not announcing finds of great value. The number of diggers there, we are told, are few, and at present things appear (according to these visitors) to be more or less in the prospecting stage.

New Transvaal Chemical Co.

The New Transvaal Chemical Company has issued £150,000 preference shares. The issue was ten times over-subscribed.

FINANCIAL ENCOURAGEMENT FOR THE PROSPECTOR.

A Lesson in State Aid—What Subsidising Prospecting has done in America.

South Africa has something to learn from the fact that Colorado has resorted to unusual but apparently sensible expedients to rehabilitate the State's metal-mining industries. The people have sought to bring the mining industry in Colorado back to the prosperous plane of ten years ago by sending out into the hills prospectors, supported by public subscriptions, to search for new deposits of mineral. In the early part of this year the commercial organisations of Denver began an earnest inquiry into the causes of the decline in Colorado's metal production, and the consequent lessening of the number of men employed in the mines and mills; these circumstances having a most important bearing upon business conditions in Denver.

This condition forced itself so heavily upon the attention of the citizens of Denver and the State that public meetings were held to discuss means for rejuvenating the State's best known industry. Columns of newspaper comment were offered by mining men, journalists, and business men. While many theories as to the decline in metal production had been advanced, it was a generally accepted belief that it was due to the fact that during late years but little prospecting has been going on in the hills, and that mines in the development and even the producing stage have greatly lessened their exploration for new ore bodies. This was attributed to the tightness of the money market, to the restrictions of the Forest Service, which were alleged to have had a deterrent effect upon prospecting within forest reserves, and to the undue exactions of the " smelter trust " in ore treatment. At the same time the people of the State were hoping, and with great confidence, that a new mining district would be found. The daily newspapers teemed with stories suggesting that the mountains of the State harboured many still undiscovered Cripple Creeks. One of such, if developed, would bring the excitement that would furnish a great stimulus to industry in all parts of the State.

The Denver *Republican* advocated the idea of raising by popular subscription a fund sufficient to send prospecting parties out on a search for minerals, during the summer. The plan was accepted by the Denver Chamber of Commerce, co-operating with other commercial bodies, and funds for such a purpose were solicited. A " Grubstake Committee," empowered to make contracts with prospectors and furnish the necessary supplies for the season, was appointed. Last May the movement was put under way. The season of prospecting under the auspices of the Denver Chamber of Commerce was to end on December 1. The committee, composed entirely of experienced mine operators and engineers, gave close attention to the work during the entire time. The prospectors were chosen with great care, and were fully instructed as to what districts to prospect, and how to proceed with locations and discovery work. It was intended to be a campaign of scientific surface prospecting. At the close of the season the committee carefully reviewed the work done, and in a report just issued it has pronounced the experiment a success, expressing at the same time the belief that much good to the State's mining industry would result. The committee, in a preliminary report, recommended the organisation of a development company to exploit the claims considered to have sufficient mineral showing. As a result the Colorado Grubstake and Mining Company was formed, with a capital of $250,000, shares $1 each, to assume charge of the development.

The feeling generally prevails among leading mining men that the results of this attempt to stimulate metal mining activity have already justified the efforts put forth. The agitation has attracted capital to many legitimate and worthy enterprises, and mining activity throughout the State, due to this or other reasons, has been decidedly increased. All districts have felt an impetus from this State-wide attempt to promote Colorado's mining interests. Just what success will attend the efforts of the Colorado Grubstake and Mining Company in operating the claims located by its prospectors remains to be seen, but the directors of that enterprise, in raising money for the work, are prepared to hold out the representation to intending purchasers of stock that they will get the fairest " run for their money " that the mining industry can afford, so far as a venture of that kind is concerned.

Fatalities in Mines.

By J. K. Leyds.

Fatal mining accidents in countries and districts, expressed in per 1,000 of persons employed :—

Countries.	1907.	1908.	1909.
Alberta	3 (?)	2 (?)	1.73
Algeria	1.60	0.85	1.64
Australia	1.31	1.36	0.93
Austria	1.23	1.01	1.10
Belgium	1.03	1.06	0.95
Bohemia	1.45	1.36	1.15
Bosnia	1.99	1.78	2.30
British Borneo	†	†	11.88
British Columbia	5.10	3.99	7.62
British Guiana	0.26	0.69	0.86
Bulgaria	0.44	0.92	0.70 (?)
Canada	3.16	3.29	3.73
Cape Colony	2.29	2.35	1.25
Ceylon	0.33	0.24	0.11
Egypt	1.36	0 (?)	3.68
France	1.24	1.08	1.38
Germany	2.36	2.56	2.13
Gold Coast	2.75	2.66	3.71
Greece	1.96	0.88	1.55
Hungary	1.07	1.73	2.47
India	0.90	1.50	1.42
Italy	1.90	1.29	1.31
Japan	2.71	1.55	2.35
Kimberley	3.17	2.19	1.63
Malay States	1.00 (?)	0.74	0.90
Mexico	5.18	4.64	5.78
Natal	2.73	10.38	2.85
Netherlands	1.74	2.36	1.03
New S. Wales	0.94	1.36	0.93
New Zealand	1.43	1.45	1.64
Nova Scotia	2.89	3.12	2.70
Ontario	1.40	2.77	2.87
Orangia	2.	1.56	1.12
Peru	3.10 (?)	2.31	2.70 (?)
Portugal	2.43	1.26	1.35
Portuguese East Africa	3 (?)	2.02	1.03
Prussia	1.44	2.42	1.88
Quebec	1.46	1.11	1.23
Queensland	0.75	2.02	1.99
Rhodesia	3.96	4.28	4.92
Russia	1.44	2.52	2.10 (?)
Saxony	1.60	1.30	1.81
Servia	1.48	1.01	2.73
South Australia	1.15	0.28	0.14
Spain	2.30	2.28	2.31
Sweden	1.22	1.11	1.16 (?)
Switzerland	3.20	3.19	2.17
Tasmania	0.80	0.93	0.99
Transvaal	4.58	4.03	5.32
Trinidad	0 (?)	0.64	0 (?)
United States of America	4.66	3.42	3.35
Victoria	1.16	0.93	0.77
West Australia	2.41	2.32	1.85
Coal Mines only—			
World	2.40	2.13	2.11
Foreign countries	2.97	2.48	2.48
Coal and Gold—			
United Kingdom	1.31	1.32	1.43
British Empire	2.39	2.40	2.93

† None reported.

THE YEAR WITH THE WOLHUTER.

Increased Profits due to Greater Tonnage Crushed, Higher Grade and Reduced Costs—Points from the Consulting Engineer's and Manager's Reports.

In his report on the Wolhuter, the Consulting Engineer, Mr. S. C. Thomson, writes:—"As predicted in my report last year, the profit for the period under review has shown a very substantial increase, that is from £122,554 to £172,163. This is accounted for mainly by the fact that practically 40,000 tons more were milled, the grade of ore treated showing the small advance from 6·56 dwts. to 6·71 dwts. It is satisfactory to note also that the average working costs show a reduction of 10·7d., and that the extraction has improved from 92·8 per cent. to 94·6 per cent. The ore reserves now amount to 808,780 tons, having a value of 6·45 dwts., over an estimated stoping width of 51 inches. These reserves have been carefully calculated and checked. The fact that they do not agree with the ore reserves as published last year, plus the ore developed during the year, less the ore mined, can be explained in the same way as reported fully last year, namely, variations in stope widths and mining ore previously classed as unpayable. There is every reason to anticipate that the operations during the present year will be at least equally as successful as for the past year."

The Manager, Mr. A. R. Robertson, writes:—"The footage developed during the year amounts to 12,888 feet. The footage done in the Deep Level, East Incline and Mynpacht Sections exposed 47,157 tons over 57 inches, assaying 2·69 dwts. Deep Level Section: In this section the development for the year totals 6,564 feet, or 1,603 feet in excess of last year. The footage sampled is 5,097 feet, averaging 5·5 dwts. over 45·5 inches. 10th Level: The South Reef stopes in the Eastern Section on this level maintain a fair average value, viz., 6·6 dwts. over 56 inches, and on the Main Reef raise 2 east the last 180 feet sampled average 6·5 dwts. over 40 inches. 13th Level: Main Reef Leader on this level is so far very satisfactory, 180 feet going 8·0 dwts. over 40 inches. 17th Level: On the east of the fault encountered on this level good values are obtained from both South Reef and Main Reef Leader, 245 feet of the Main Reef Leader going 8·2 dwts. over 42 inches, and 30 feet of South Reef 6·1 dwts. over 42 inches. Values obtained west of fault are not so good, 460 feet of South Reef averaging 5·1 dwts. over 43·6 inches, and Main Reef for 455 feet gives 4·6 dwts. over 61 inches. 18th Level: On this level both Main and South Reef values are much the same as at last report, 490 feet of Main Reef averaging 5·4 dwts. over 57·3 inches, and 360 feet of South Reef 5·1 dwts. over 43·5 inches. 19th Level: With the exception of the South Reef west (which for 400 feet only assays 4·0 dwts. over 43 inches) the values obtained from both reefs on this level are very good; on Main Reef Leader east 530 feet average 7·4 dwts. over 45 inches, and on the west of shaft 265 feet sampled assay 7·0 dwts. over 40 inches. South Reef east for 305 feet shows 7·5 dwts. over 49 inches. A crosscut has been put in 210 feet east of shaft, exposing complete section of Main Reef averaging 4·6 dwts. over 166 inches, and on west side the same reef has been exposed, going 3·8 dwts. over 191 inches. The connection with the east incline shaft on this level has been completed both on Main Reef Leader and South Reefs. 20th Level: On this level the South Reef was met with in crosscut, 360 feet from shaft. Driving is going forward on South Reef. The values to date on east drive are 75 feet sampled 4·8 dwts. over 42 inches, and west drive 2·7 dwts. over 43 inches. The Main Reef Leader was cut at a point 435 feet from shaft, averaging 3·9 dwts. over 40 inches. East Incline Section.—The total footage developed in this section for the year is 6,255 feet, of which 5,444 feet have been sampled, averaging 7·2 dwts. over 47 inches, as against 4,587 feet at 7·8 dwts. over 50·2 inches for previous year. 15th Level: Operations on this level have been confined to the Main Reef Leader, but the results have been very poor, 455 feet of driving averaging 3·2 dwts. over 46 inches; the last 20 feet are somewhat better, showing a value of 7·3 dwts. over 40 inches. 16th Level: On this level the results obtained from the Main Reef Leader are not of a payable nature, 210 feet averaging 2·8 dwts. over 47 inches. The South Reef development, on the other hand, is very good, viz., 565 feet going 9·3 dwts. over 48 inches. 17th Level: Pyritic bands have been exposed in the 'face' of Main Reef Leader drive west, averaging 9·5 dwts. over 56 inches for a footage of 20 feet. The Main Reef Leader values are also very good, 340 feet going 12·1 dwts. over 50 inches. 18th Level: Owing to the discouraging results obtained from South Reef at this point, 339 feet averaging 1·3 dwts. over 44 inches, development has been suspended on South Reef. The western boundary has been reached in the Main Reef Leader drive, and the values for 500 feet sampled are 10·9 dwts. over 40 inches. 19th Level: South Reef development on this level is of very poor grade, 310 feet going 2·9 dwts. over 50 inches. The value of the Main Reef Leader west for 520 feet is 10·3 dwts. over 40 inches. Main Reef is also exposed in this drive, the combined values over 80 inches being 6·5 dwts. for 395 feet sampled. 20th Level: Development results on the Main Reef Leader are very satisfactory, 300 feet west averaging 6·0 dwts. over 59 inches, and 100 feet east 12 dwts. over 40 inches. Pyritic Quartzite: In the section lying between the 15th and 16th levels, west of east incline shaft, a good body of pyritic quartzite has been located, and is being worked. This lode is also being stoped on the 16th level west, the value being 7·7 dwts. over 50 inches. On the 17th level west, east incline shaft, driving has been done on this lode, 20 feet going 9·5 dwts. over 56 inches. The quartzite lode is also being worked in the Mynpacht Section, where it is of a uniformly payable nature. Mynpacht Section: Very little development has been done here during the year, but a very considerable tonnage has been obtained from reclamation work. Work is still being continued in the upper levels. Generally: Mining operations have been greatly handicapped, particularly during the past three months, owing to the shortage of native labour. As the best results can only be obtained by the use of hand labour in many parts of the mine, the substitution of machines in many of the working places is inadvisable, and would, I fear, have disastrous effects on large sections of hanging wall in the faulted country, inevitably leading to falls of ground. On re-estimation the ore reserves at date are as follows: 808,780 tons valued at 6·45 dwts. over 51·6 inches. In addition to the ore reserves shown above there is available some 102,000 tons contained in pillars, exclusive of shaft pillars, made up as follows: Deep Level Section, 35,000 tons at 6·2 dwts; East Incline Section, 21,000 tons at 6·6 dwts.; Mynpacht Section, 46,000 tons at 7·2 dwts.; total, 102,000 tons at 6·7 dwts. Shaft sinking operations have been considerably retarded by a large influx of water, the distance sunk for the year being 257 feet, making the total depth of shaft at date 3,495 feet, leaving a further 170 feet to the southern boundary. The following is approximately the tonnage mined from each reef during the year: Main Reef, 97,518 tons; South Reef, 137,587 tons; Main Reef Leader, 197,978 tons; Pyritic Lode, 2,966 tons; total ore sent to crusher house, 436,049 tons. Of the above tonnage the following percentage came from the three sections, as under: Deep Level, 176,252 tons, equal to 40·420 per cent.; East Incline, 197,430 tons, equal to 45·277 per cent.; Mynpacht, 62,367 tons, equal to 14·303 per cent.; total, 436,039 tons, equal to 100·000 per cent. Approximately 436,049 tons of rock were sent to the crusher house, of which 91,984 tons, equal to 21·095 per cent., were discarded as waste. Milling: Ore sent to crusher from 1st November, 1910, to 31st October, 1911. 436,049 tons; discarded as waste (21·095 per cent.), 91,984 tons; total, 344,065 tons; in mill ore bins, 1st November, 1910, 450 tons; total, 344,515 tons; tons milled, 344,015 tons; in mill ore bins 1st November, 1911, 500 tons. The tonnage milled exceeds that of last year by 39,655 tons, representing an average monthly increase of about 3,305 tons. It is gratifying to be able to record a further decrease in the working costs of 10·691d. per ton. During the year the following additions and alterations have been made to your plant: Two electrically driven tube mills, 22ft. by 5ft. 6in., have been installed, together with 12 new stationary amalgamating tables. A No. 6 breaker has been put in on the crusher station, replacing one of the old No. 5 breakers. Two 10in. slimes pumps, with necessary piping and valves, have replaced the 7in. pumps and piping at the cyanide works, for treatment of slimes. An extra tank has been erected on waste dump for mill water supply. Two 8in. Robeson-Davidson sands pumps have been installed, and four classifying cones erected to deal with the extra pulp from mill. A temporary pumping plant was installed at the dam, pending the re-erection and re-building of pumps and pump station destroyed by fire. In conclusion, I again wish to place on record my appreciation of the services of the entire staff throughout the past year."

ACCIDENTS IN TRANSVAAL MINES.

Some New Views—Are Rand Methods to Blame?—Utility of Hanging Wall Inspectors.

Before the Chemical, Metallurgical and Mining Society last Saturday night, Mr. J. E. Vaughan, Inspector of Mines, Natal, read the following contribution: Mr. Chilton's paper is welcome, as drawing attention to a subject which has not received the notice in the past that it deserves. While agreeing with the author that the accident and death rates on the Rand are appalling, I do not consider it fair to make comparisons between the Rand and England. In England, underground workers are miners, in the Transvaal only about 3 per cent. of the persons employed below ground are skilled miners, the remainder are mainly ignorant savages. In the English collieries, no person is allowed to work alone at the face until he has had two years' experience of such work under the supervision of skilled workmen; on the Rand, owing to the dearth of competent miners, one often finds a man with only six months' experience of underground work, not only working alone at the face, but having sole charge of from 30 to 40 natives. Again a comparison with England on the tonnage basis is misleading, in England the bulk of the tonnage is made up of coal, in the Transvaal of reef from the Rand mines; more labour is required to get a ton of reef than a ton of coal, and in consequence more accidents are likely to occur. I have not been able to get recent literature on the subject, but a comparison of the death rate based on the tonnage crushed, would be interesting if made between the Transvaal and some other field on which coloured labour is employed, such as Mysore. The author states that the Transvaal deep levels are more dangerous than the outcrops, and, judging by the death rate, this would appear to be so. I can see no sufficient reason for the death rate on the deep levels to be higher than that on the outcrops; the minnig methods followed are the same. I agree with the miners and attribute the higher death rate on the deep levels to the "rushing" methods which are adopted. A huge output is required from a deep level, and the mine managers have to secure that output, or go. In consequence every official has the fear of "losing his job" unless the promised output is secured; the underground work is rushed, risks are taken, and the accident rate naturally goes up. Why is it that on the outcrop mines, where there has been no great increase in the monthly tonnage crushed, the accident and death rates keep low; these mines are re-opening old stopes, the ground is often worked out on three sides of them, they should be more dangerous than the deep levels and yet they have fewer accidents. It is often argued, that the best men keep to the outcrops, and it is difficult to get good men in a deep level, and therefore fewer accidents occur on the outcrops; I think the real reason lies in the fact that the lives of many of the outcrops are too short to allow for an increase in stamps and tube mills, and consequently the men are not rushed to put up the tonnage. One often hears that such a mine captain "is a good man, he is a hustler," it naturally follows that he hustles the shift bosses, and the men are hustled. The shift boss is not usually polite to the man who is late in starting his boys. Some stopes can be examined in an hour, but there are many in which the hanging and footwalls are so treacherous, and the stopes so difficult to get about in, that two hours will not suffice for a proper examination and the removal or securing of dangerous hanging and footwall. The mine officials recognise this, but some of them make no allowance for it, and do not regard the careful man with the favour he deserves. It seems natural that as the workings get deeper, so the roof pressure increases, but I very much doubt whether this increase is so great as is thought; personally I think there is more pressure on the roof supports at a depth of 300 feet in an outcrop where much ground has been worked out, than there is in a new deep level mine at 3,000 feet. Are pillars being left more frequently or of much greater size in a deep level than in an outcrop, or are greater precautions being taken to hold up the roof? I think not. When the outcrops are exhausted and the deep levels nearly so, extraordinary pressures must be expected; but at present I am convinced that much of the flaking of pillars which is often pointed to as proving the great weight the pillars are under, is due more to weathering than to weight. The author states that owing to the time occupied in getting to the working places and to the abolition of the dinner hour, the work has now to be compressed into nine hours instead of ten; I do not agree with him. The time spent in the shafts on a deep level is less than on an outcrop, on account of the fast hauling in vogue on the deep levels; in any case the time spent in getting to the working place is little when compared to the duration of the shift. In the old days when men came up for dinner, their watches went fast about 11.30 a.m., and there was no great competition to catch the first skip down after dinner; while on descending, arguments started in the boarding house were thrashed out on the explosives boxes, until the appearance of an official broke up the discussion; so that the time for dinner usually meant a loss of two hours. The author remarks that to drill the round over, and complete a bench, requires greater speed and higher skill than was necessary in the early days. In the early days when men were not asked to get a round out in a day, and two hour-hole benches in a stope was considered a fair day's work; nowadays a manager points with pride to increased footage driven and increased hand and machine drill efficiency. These increases are often gained at the expense of an increased accident rate. Further on in the paper, the statement is made, that when an extra hazardous job has to be undertaken, old and experienced natives are taken as assistants, and in consequence the accident rate is increased among them; I think the increased accident rate among old mine boys is due to their efforts to "show off" before new arrivals, by so doing they often place themselves in great danger with disastrous results. Few accidents occur in really dangerous places, the reason given for this is, "we put on good men, give them plenty of timber, *and don't hurry them.*" If sufficient good men were available, if they were given plenty of timber and were not hurried, throughout the mine, our accident rate would soon come down to reasonable proportions. The suggestion of lectures to miners seems excellent, but I don't think the lectures would be successful—the good practical miner is convinced that he has nothing to learn, and has no use for theory. After a day's work in the mines, few men will attend a lecture. The author advocates the employment of hanging wall inspectors, I used to advocate the same, but am now convinced that they are of little use. The appointment of a hanging-wall inspector tends to make the stoper careless, by relieving him of a responsibility he ought to take; the man who works in a stope is the proper person to examine it. A hanging-wall inspector to be of any value, must be an active man and a thoroughly competent miner, with an appetite for work, because the more thoroughly he examines a stope, the more work he will have to do in it, and if it is a difficult stope to get about in, the work may not be pleasant. To examine stopes properly and at frequent intervals, will require a very large number of hanging wall inspectors. A competent hanging-wall inspector would do well on contract, and in consequence good men will not take on the job, except at a higher rate of pay than that given; in the past hanging-wall inspectors have often been poor miners, or novices at mining. I do not agree with the appointment of a small army of Government Inspectors to examine the mines; the mining companies should keep their mines safe, why should they not appoint their own inspectors?

(To be continued.)

Kleinfontein Power Supply.

It is notified that the permission granted to the Kleinfontein Power Association, under Government Notice No. 315, published in the *Union Gazette*, dated 21st February, 1911, is hereby amended by the deletion of clause five therein, namely: "The current is to be delivered at the Municipality's distributing station at a fixed price of twopence halfpenny per unit as per meter reading at the distributing station, and no variation of this price is to be made." And the substitution therefor of the following: "The current is to be delivered and metered at the Municipality's distributing station, or such other point as may be mutually agreed upon between the Association and the Municipality, at a fixed price of twopence halfpenny per unit when the current is used for lighting purposes, and of a penny halfpenny per unit when used for power purposes, and no variation of these prices is to be made."

Outside Districts.

Natal Gold Mines.

Some fifteen developed claims of the Natal Gold Mines, Ltd., which company has been liquidated, have been bought in by a syndicate, which is now floating a new company, named the New Natal Gold Mines, Ltd., with a gross capital of £20,000. The old company had to liquidate for the reason that their funds were exhausted.

Doornkop Deproclaimed.

In accordance with the provisions of sub-section (3) of section thirty-one of the Precious and Base Metals Act, 1908, of the Transvaal Province (No. 35 of 1908), it is notified that it is the intention of His Excellency the Governor-General to deproclaim as a public diggings the south-eastern portion of the farm Doornkop No. 46, district Krugersdorp, Ward West Rand, in the mining district of Krugersdorp, registered in undivided shares in the names of S. B. Harsant, J. S. Parkes, J. G. Meyer, E. P. Solomon, M. Dold, B. Ryan, C. F. J. Meyer, J. G. van Aardt, H. F. van Aardt, and G. A. Hay, the said south-eastern portion being in extent 1,822 morgen 220 square roods, and being portion of the area proclaimed a public diggings by the President of the South African Republic by Proclamation dated 3rd December, 1889.

T.C.L. Prospecting Activity.

INTEMS FROM THE INTERIM REPORT.

Witfontein, No. 371, and Newbury, No. 937, Waterberg District.—Driving is being started from No. 4 shaft on the occurrence referred to in the last interim report to decide the extent of the values along the strike. The prospects are not so encouraging as at first thought.

Weynek, No. 763, Rustenberg District.—No recurrence of payable values having been encountered in the shafts, it has been considered advisable to stop further work. Prospecting is, however, still being carried out on other portions of the farm in the hope that something of a payable nature may be found.

Leeuwpoort, No. 938, Rustenberg District.—Vigorous prospecting and development work continues to be carried on with very satisfactory results. Plans, etc., for reduction work are now in course of preparation.

Enterprise Tin Field, Rhodesia.—The prospecting work on this property, referred to in last interim report, did not disclose payable ore bodies, and has accordingly been stopped.

Fairview Claims.—Development on payable values is still proceeding.

Florence and George's Claims.—Development is proceeding on George's Claims to prove the extent of values in depth.

Marico.—The company has acquired a 40 per cent. interest in certain options in the district of Marico in respect of zinc workings which are being opened up.

Butterfly-Cecil Group, Rhodesia.—The company has acquired a 10 per cent. interest on very reasonable terms in thirty blocks of claims in the Hartley district, known as the Butterfly-Cecil Group, on which development work is proceeding.

MINING.

Rietfontein (T.C.L.) Limited.—The results of the experiments made on ore from the lower levels showed that the ore there was too refractory to be payable. It has therefore been decided to stop further development at depth and to erect a small plant at once to deal with the ore from the upper levels. The type of plant to be employed is now being considered.

Weynek Tin Company, Limited.—During the quarter ending September 30, 1911, 2,008 tons of ore were milled, and the concentrates produced are being retreated. Ten tons of marketable concentrates were shipped for realisation. Consequently nothing in excess of the minimum rental can be expected.

Mount Morgan Mine.—Development has been restarted with a view to increasing the ore reserves sufficiently to justify the erection of a reduction plant as recommended by Mr. Pearce, the company's metallurgist.

Zaaiplaats Lease.—It having been found possible to make arrangements for the use of the Groenfontein reduction plant, and the consent of the Government having been obtained to crush at this plant all ore developed up to June 30 last, milling of the lease ore has been commenced. Should the development on the lease continue to be satisfactory, and the Groenfontein plant be still available, the consent of the Government will probably be obtained to continue milling operations still further.

OBITUARY.

THE LATE MR. JOHN STUART.

There passed away this week, at the Johannesburg Hospital, Mr. John Stuart, one of the best known figures in South African journalism. Mr. Stuart had been ailing for some time, but his death was quite unexpected. His life was full of incident, travel and adventure, and South Africa claimed him after a brief but brilliant career in London. He was one of Henley's "Young Men," and he never ceased to acknowledge Henley's influence on his work. Coming to South Africa, after serving on the "National Observer" and "Pall Mall Gazette," he edited the "Cape Daily Telegraph," owned by Sir Joseph Robinson, thence he came to the Rand first to edit this journal, and afterwards to represent the "Morning Post," for which he corresponded during the war. After some editorial experience in Rhodesia, he returned to London and joined the "Morning Post," in the service of which paper he went through the siege of Ladysmith. His book, "Pictures of War," was a marked success even among the deluge of books that followed the close of hostilities. Returning to the Rand in 1905, he filled many positions on the local Press, and, after a brief spell as Assistant Editor of the "Leader," devoted himself to reviewing and literary criticism. In this he excelled, and his work became a feature of the Johannesburg Press. He occasionally contributed to our own columns, and his incursions into mining, though laterly confined to Rhodesia, were invariably marked by the firm grip and wide understanding that distinguished all his work. His death removes from South African journalism one of its most able leaders, and from the Rand a remarkable and most lovable personality.

THE LATE MR. JOHN STUART.

NATIVE LABOUR SHORTAGE AND THE MINING INDUSTRY.

Co-operation in Recruiting—Government Asked to Convene Conference—An Urgent Question —Important Speech by Mr. J. W. S. Langerman.

In the course of his speech at the annual meeting of shareholders in the Randfontein Estates Gold Mining Company, held on Wednesday, Mr. J. W. S. Langerman, M.L.A., made a long reference to the gravity of the situation arising out of the shortage of native labour on the mines, and concluded by suggesting that the Government, as the largest shareholder in the mines, should be invited to convene a conference of the group representatives to deal with the question, which, he said, was one of vital importance, not only to the industry, but to the whole country. Mr. Langerman's remarks were as follows:—

Effect on Dividends.

At the meeting of the Central Company, held earlier in the morning, I drew attention to the fact that our operations had been seriously handicapped on account of insufficient native labour. This experience was, I believe, shared by every other company on these fields, the majority of them being even greater sufferers than we were. On the Witwatersrand area sixty-one mines are producing gold, and of these only thirty-nine were able to pay dividends for the year 1911. It may be taken for granted that most of the non-dividend paying companies would have been able to pay dividends, and the dividend-paying companies to pay increased dividends, if the disabilities placed on them by the shortage of labour had not existed.

Serious Position Disclosed.

On referring to the December statistics of the W.N.L.A. I find that the complement of natives required for the full and efficient working of the gold, diamond, and coal mines associated with the Witwatersrand was, in round figures, 297,000, and that the supply amounted to 195,000, or a shortage of 102,000 natives, equal to 34½ per cent. In December of the previous year the requirements totalled 277,000 natives, and the supply was 197,000, or a shortage then of 80,000, equal to 29 per cent. These figures disclose a very serious position indeed. It is apparent that the present labour supply is totally insufficient for the needs of the industry. It is also evident that we are losing ground, inasmuch as while our requirements in the past year have increased by 20,000 there has been no corresponding increase, but a slight falling off in the number of natives at work.

Money and Effort Unspared.

Probably at no period of the history of these fields have such strenuous efforts been made to augment the labour supply as are being made at the present time, and certainly at no period have such large sums of money been disbursed in the furtherance of that end. In spite of these efforts, supplemented by the improved housing and victualling conditions established for the natives at work, it would appear from the figures quoted that the supply of labour from present sources has about reached its highest point. A general shortage of native labour embarrasses the mining industry in two different directions. It creates competition among the companies, thereby increasing the expenses of recruitment in a degree varying according to the popularity with the natives of the mine for which the labour is required, and to the nature of the channels of supply; and it further involves the companies in serious loss of profits due to curtailment of operations, reduced grade, and higher cost of production.

Co-operative Recruitment Proposal.

Various schemes have been proposed to meet the difficulties, the chief one being a proposal for co-operative recruitment under single control, for which it is claimed that a cheapening of the cost of labour to the mines will result. Such a scheme might possibly be the means of effecting a slight reduction in the expenditure which is now incurred by the separate labour organisations, but it certainly possesses no advantages over the present methods of recruitment that are likely to result in lower wages and recruiting costs so long as the demand for labour exceeds the supply, and the keen competition of employers of labour outside the mining industry has to be encountered. I am moreover convinced that the cessation of individual effort on the part of the groups would cause a serious diminution of our already inadequate output of labour, and thus aggravate the existing shortage, a disaster to the industry which no minor advantages could remedy. An essential feature of the proposed scheme is the equal distribution of available natives in proportion to the ascertained requirements of each mine. As the percentage of natives employed on the mines on the 31st of December varied from 51 per cent. to 77 per cent. of their complements, and the average 65 per cent., it follows that equal distribution means that those mines enjoying a high percentage of labour will have their percentage reduced to the average of 65 per cent., and those having a low percentage will have theirs brought up to that average.

Attitude of Robinson Group.

Our companies having made satisfactory arrangements for securing sufficient labour within the next few months to meet all their requirements, we should be failing in our duty to our shareholders if we entertained a proposition whereby we should have to relinquish nearly a third of our labour supply to benefit other mines in which our shareholders have no interest. If, however, it could be shown that by the proposed combination a larger supply of native labour can be obtained which will satisfy the requirements of all the mines, then there can be no objection to such a combination, but as I have already stated the scheme proposed will result in still further reducing our supply. In my opinion no amount of combination on the part of the mines will cause a reduction in the cost of native labour so long as we have a shortage of 30 to 40 per cent., and so long as we have to compete with the urgent demands for native labour of the rest of the Union. While the mining industry was practically the only important competitor in the field of native labour there was little difficulty in filling our requirements, but since the War conditions have changed, and the increasing demands created by the extension of Government works, the ever increasing population, the expansion of old industries and the springing up of new ones, and the rapid growth of the farming industry, all combine to bring into the field against us competitors whose existence and well-being also depend on a plentiful supply of native labour, and whose demands for a fair share of same cannot be ignored.

Entirely Inadequate Supply.

Speaking generally in regard to the native labour supply for the Union, it is idle to disguise the fact from ourselves that the available supply within the Union and from outside sources from which we now draw supplies for the mines is entirely inadequate and falls far short of our needs, and so far as the mines are concerned our sources of supply have recently been further circumscribed by the closing of certain areas in the Transvaal and Natal Provinces to recruiting for the mines. It may be said that there are enough adult natives within the Union to supply our needs, but unfortunately the whole question is complicated by the system of land tenure which enables the large majority of the natives to live on the land in idleness without any necessity to work. With the facilities placed at the disposal of natives to acquire land by purchase, lease or squatting, and by the extension of locations when becoming overcrowded, the labour supply is entirely dependent on the success or failure of the native on the land. If he succeed in raising good crops his natural disinclination to work may be gratified, and only when necessity drives him by failure of his crops can we expect a reasonable addition to our labour supply. It will thus be seen that neither the mining industry nor the outside employers can ever look forward to a continuous and permanent supply of labour.

Government Assistance Necessary.

The whole question is an urgent national one, and should be dealt with speedily by the Union Government. The development and expansion of industries and commerce will be arrested, and the mining industry is becoming paralysed, for without a plentiful and permanent supply of labour there can be no progress. Though we may possibly have periods in the future when, owing to the failure of crops, the labour troubles of the mining industry may be less acute than they are at present, yet I feel that there can be no permanent solution of the problem until the land system is altered or unless new sources of supply are opened up with Government assistance outside the limtis of the Union. It must be evident to the Government that under existing conditions of carrying on mining operations the mineral resources of the country are being exhausted without a proper return on the capital and labour expended thereon, and it is also clear that many of the low-grade mines have little or no hope of making any return on their capital unless provided with a full complement of native labour, which at present there seems no prospect of obtaining. Meantime the ore in these mines is being depleted year by year, and the assets wasted as far as shareholders are concerned.

Dividend-Paying Mines.

The dividend-paying companies are also suffering from the same cause. Insufficient and expensive labour is rendering it impossible for these mines to be worked to the fullest extent or to the best advantage, and their profits, in consequence, are less than if these disabilities were removed. Sooner or later, if present conditions continue, they are bound to react on the Government's share in the profits, on the wages earned by white employes, and on the prosperity of the Union generally. It is conceivable that the low-grade mines that are just able to make ends meet by working under existing unfavourable conditions will be compelled by force of circumstances to close down, which will have a disastrous effect on the credit of the Union. Such a course must be avoided, and it can only be done by the Government assisting by legislation the augmentation of our local supplies or by facilitating the opening up of fresh sources of supply elsewhere.

Earnest Effort Required.

I have dwelt at length on the labour problem, because I realise that the time has come when an earnest effort should be made to find an effective solution of it. To this end I suggest that the Government, as the largest shareholder in the mines, should be invited to convene a conference of the group representatives to deal with the question, which is one of vital importance, not only to the industry, but to the whole country.

Rhodesian Section.

LATEST MINING NEWS.

The Surprise to be Tributed—A Mill for the Sabi—A New Umvuma Producer—Miners' Phthisis in Rhodesia—Re-organisation of the R.N.L.B.—The Big Amalgamation.

It is officially announced that the celebrated Surprise mine, near Selukwe, is available for tributing. This statement may be taken to amount to an admission that the management of the mine (Willoughby's Consolidated Company) do not see their way to working the property at a profit, and the mine is accordingly offered to small mine workers on a leasehold basis. The Surprise has been a singularly disappointing venture. After a great deal of expensive exploratory work the long lost reef was reported to have been relocated about two years ago, and in consequence of this the shares advanced to a high figure. Recent results have, however, been very disappointing, and the last report and balance sheet of the company disclosed an almost negligible tonnage of ore in reserve and a generally unsatisfactory position. Fortunately for shareholders a substantial participation was secured by the controlling company in the Eileen Alannah—a very promising flotation. It will be interesting to learn whether tributors make more of a success of the concern than did the limited liability company.

* * * *

The Rhodesia Gold Mining and Investment Company is pushing on with development at the sixth level in the Sabi mine, and plans and estimates for a reduction plant similar to that in operation at the Lonely mine will be given consideration by the London Board at an early date. Driving from the main shaft has proceeded for over 500 ft., and connected with the incline shaft in the heart of the ore shoot. The average width of the reef is 3 ft., and the values average between 11 and 12 dwts. A winze below the 6th level has just been started, and is in ore of the value of 12 dwts., the reef being 43 ins. wide. An auxiliary incline shaft is now being sunk in the footwall of the reef from the 6th level, this being the quickest means of opening up the ore body, which dips to the north. In the past the recovery obtained at this property has been in the neighbourhood of 10 dwts. per ton from about 50,000 tons milled.

* * * *

Although one or two important Gwelo district mines have dropped out of the producing list during the last month or two, one hears of new mills being started up. The Excelsior mine, near Umvuma, for instance, is in full swing again, the battery having been started at the beginning of the year. It will probably take the management a little time to get into proper running order owing to the usual delays which always accompany the restarting of a mill. This promising property is now in capable hands and is being developed in a systematic manner.

* * * *

That dread word, phthisis, has happily for Rhodesia, not hitherto figured in the mining politics of Charterland. It is, however, of the very highest importance to note that in the report on the public health for 1910, issued by the Government of Southern Rhodesia, it is announced that miners' phthisis has made its appearance in the mines of Matabeleland and Mashonaland. It is to be regretted that no statistics are given as to the actual number of cases identified, but special reference may be made to a statement emanating from the District Surgeon at Hartley—an assertion that cases of miners' phthisis are on the increase. Some measure of comfort may be drawn from his further statement that it is confined to miners who have migrated to Rhodesia from the Witwatersrand. The much-to-be-regretted fact remains, however, that this terrible malady, which has killed innumerable miners in the Transvaal, has made an appearance in Southern Rhodesia. Having regard to the fact that increasing numbers of rock drills are being utilised in Charterland mines, and that development throughout Southern Rhodesia generally is on the increase, the administrative, mining and medical authorities of the country would be well advised in formulating a sound and definite plan of campaign with a view to checking the advance of silicosis.

* * * *

The re-organisation of the Rhodesian Native Labour Bureau appears to be at last *un fait accompli.* The share capital of the concern is fixed at a quarter of a million sterling with a debenture capital of £75,000. Northern Rhodesia is to be reorganised under a manager with headquarters at Livingstone, and the territory has been divided into six circles, each under an Inspector, who will supervise and stimulate the work of the agents. The number of agents is being considerably increased, and permission has been obtained to utilise the services of native runners without uniforms, but with badges only, who will live in the villages. The idea of this re-organisation is to keep the existence of the Bureau and the opportunity for work in Southern Rhodesia constantly before the natives. Mashonaland has been placed under a manager with headquarters at Salisbury, and that Province will be divided into two circles, Victoria circle being one and the remainder of Mashonaland the other. It is hoped that the decentralisation will not only tend to greater local efficiency, but by relieving the management of detail allow more time at headquarters for the consideration of broad questions of policy. The following appointments are announced:—General Manager, Mr. P. L. Jenkins; Secretary, Mr. G. Upton; Manager for N. Rhodesia, Mr. T. N. Micklem; Manager for Mashonaland, Mr. F. M. C. Stokes; Accountant, Head Office, Mr. A. E. Mawbey.

* * * *

General congratulations are being showered on Messrs. J. G. MacDonald and Wm. Mitchell at their appointments as Joint General Managers of the new amalgamation of the Gold Fields Rhodesian interests and the Rhodesia Exploration and Development Company, a concern which, from the points of view of bulk, the extent, value and variety of its assets, and by no means least, the scope of the political influence it will command, will rank in Rhodesia as only second in importance to the British South Africa Company. More definite particulars are now forthcoming as to the capital and constitution of the company, and from these we gather that the amalgamation will have Lord Harris as its chairman, and, since there will sit on its Board six nominees of the Gold Fields as against three R. E. & D. nominees, it will to all practical intents and purposes be controlled by the former. The nominal capital has been fixed at £3,000,000, of which there will be issued £2,513,878—£1,740,128 to the R. E. & D. shareholders, and £773,750 to shareholders in the present Gold Fields Development Co.

RHODESIA EXPLORATION SCHEME.

Statement of Assets and Liabilities—Enormous Claim Holdings—Basis of the Amalgamation.

THE board of the Rhodesia Exploration and Development Company, Limited, have issued a circular to shareholders accompanying a statement of the company's assets and liabilities. The secretary states :—

"In accordance with the circulars of 6th and 14th ultimo, I am instructed to now place before you an audited statement of the assets and liabilities of the Company as at December 14, 1911. This statement has been prepared in the form presented, in order to show in the clearest manner the present position of the Company. No profit and loss account is included, but the ascertained profit to the above-mentioned date, including £22,863 0s. 6d. brought forward from last year, is £223,725 6s. 10d., in respect of which a dividend of 10 per cent. was paid in August last. On the regretted resignation of Dr. Hans Sauer, and while the board were discussing the appointment of a chairman, they were approached by the Consolidated Gold Fields of South Africa, Limited, with a view of a possible fusion of interests. After some negotiation the Consolidated Gold Fields of South Africa, Limited, made to your board an offer, which they were of opinion should be carefully considered by the shareholders of this company. The directors are unanimously of opinion, after mature consideration of all the facts, that the offer is one that the shareholders would be wise to adopt, but the decision is left in their hands.

"The scheme is as follows: A new company to be formed to acquire all the assets of the Rhodesia Exploration and Development Company, Limited, and the Gold Fields Rhodesian Development Company, Limited, with a nominal capital of £3,000,000, of which £486,122 will be in reserve. The Rhodesia Exploration and Development Company, Limited, would receive 1,740,128 shares of the new company in exchange for 1,546,780 shares, which would represent to the shareholders of the Rhodesia Exploration and Development Company, Limited, the following: Each holder of 10 shares would receive 11¼ shares in the new company. Each holder of 50 shares would receive 56¼ shares in the new company. Each holder of 100 shares would receive 112½ shares in the new company, and other amounts in similar proportion. Certificates for fractions of less than a share will be issued.

"This proposed distribution is calculated on the basis of nine Gold Fields Rhodesian Development Company's shares for four Rhodesia Exploration and Development Company's shares, as mentioned in the circular of December 14. To give effect to this, shareholders of the Rhodesia Exploration and Development Company, Limited, will receive the distribution mentioned above, while the shareholders of the Gold Fields Rhodesian Development Company, Limited, will be given one share in the new company for each two existing shares. The issued capital of the Gold Fields Rhodesian Development Company, Limited, is £1,547,500, so that they will receive 773,750 shares in the new company. Holders of option certificates giving the right to call shares of the Rhodesia Exploration and Development Company, Limited, at £2 10s. per share until June 30, 1912, will be given equivalent option certificates, under which they will have the right to call an equal number of shares in the new company at £2 4s. 6d. per share.

"Your directors, after a most careful examination of the assets, are satisfied that the valuation arrived at, taking into account the value of the mining properties of the Gold Fields Rhodesian Development Company, Limited, of which they were given the fullest particulars by Mr. H. A. Piper, the consulting engineer to the Consolidated Gold Fields of South Africa, Limited, are fair and reasonable, and can be safely adopted. The basis of the amalgamation was arrived at under expert advice, as market prices did not, in the opinion of your directors, reflect the proper values. In the event of the proposals being adopted, the management would be under the control of the Consolidated Gold Fields of South Africa, Limited.

"The board of directors of the proposed new company would be the following: Right Hon. Lord Harris, Walter Forbes, Stanley Christopherson, H. G. Latilla, E. Birkenruth, A. McLennan, J. Frinsep, Major H. L. Sapte, H. C. Porter, and George Mitchell and J. G. McDonald, resident directors in Rhodesia.

"The following is a statement as to the principal assets of the Rhodesia Exploration and Development Company, Limited. Shares: Large holdings in the following companies: Antelope Gold Mine (Rhodesia), Limited, Amalgamated Properties of Rhodesia, Limited, Asp Gold Mining Company, Limited, Bell Reef Development Company, Limited, Chicago-Gaika Development Company, Limited, Crescens (Matabele) Mines and Land Company, Limited, Chrome Company, Limited, Eldorado Banket Gold Mining Company, Limited, Falcon Mines, Limited, Gaika Gold Mining Company, Limited, Eileen Alannah Mining Company, Limited, Kimberley Mashonaland Gold Mining Company, Limited, New Rhodesia District Development Company, Limited, Peel's Rhodesian Syndicate, Limited, Planet-Arcturus Gold Mines, Limited, Pinner's Hall, Limited (debentures and shares), Rhodesia Consolidated, Limited, Rhodesia Mines Trust, Limited, Rhodesia Railways Three per Cent. Debentures, Randfontein Estates Gold Mining Company, Limited (debentures and shares), Randfontein Central Gold Mining Company, Limited (debentures and shares), Selukwe Columbia Gold Mine, Limited, Shamva Mines, Limited, Sociétié Francaise de la Rhodésie, South African Copper Trust, Limited, South African Gold Mines, Limited (debentures and shares), Thistle-Etna Gold Mines, Limited, Transvaal and Rhodesian Estates, Limited, Transvaal Coal Trust, Limited, United Rhodesia Gold Fields, Limited (debentures and shares), Van Ryn Deep, Limited, Welgedacht Exploration Company, Limited, Willoughby's Consolidated, Limited, Witwatersrand Deep, Limited, and smaller holdings in many other companies.

"Claims: 2,573; Land: Interest in about 640,000 acres; Stands: Three stands in Bulawayo and one stand in Salisbury, with buildings and offices; Options, &c.: Options on a considerable number of claims, including a tin property in the Abercorn district, and various other ventures. Full particulars regarding the latest developments on the chief mining properties in which the company is interested were given in the circular of 6th ulto. Your directors would, however, draw attention to the very encouraging nature of the developments on practically the whole of the properties mentioned.

"The following is a summary of the chief assets of the Gold Fields Rhodesian Development Company, Limited: Cash, loans, and first-class securities, £375,000. Shareholdings: Substantial holdings in Shamva Mines, Limited, Lonely Reef Gold Mining Company, Limited, Rhodesia Gold Mining and Investment Company, Limited, Cam and Motor Gold Mining Company, Limited, Globe and Phœnix Gold Mining Company, Limited, Falcon Mines, Limited, Asp Gold Mining Company, Limited, Bell Reef Development Company, Limited, and smaller holdings in others. Golden Kopje, Union Jack, and Claymore, 470 claims. Arrangements have practically been completed for the flotation of these claims into a proprietary company, with a capital of £500,000, of which £150,000 will be working capital and £51,432 in reserve. The Gold Fields Rhodesian Development Company, Limited, will hold approximately one-third interest in this company.

"Land: About 10,000 acres; Stands: In Bulawayo, Salisbury, and Victoria; Claims: 250; Options: Valuable options on the following claims: Gondia, 60 claims, Lomagundi district; Northern Star, 40 claims, Lomagundi district; Hanover and Teutonic, 100 claims, Filabusi district; Iron Duke, 130 claims, Mazoe district. In addition, further options are held on a tin property in the Abercorn district, the Strange Coal area, and a promising property near Salisbury.

"The following are brief details supplied by Mr. H. A. Piper regarding the position of developments on the above-mentioned properties: Gondia Claims.—This property has very extensive old workings over 700 ft. in length, and has been developed to a depth of about 107ft., assays showing 6 to 8 dwt. gold and 4 per cent. to 8 per cent. copper. At the deepest point reached in the shaft the assays were 4 dwt. to 10 dwt. gold, and 3 per cent. to 4 per cent. copper. The lode varies from 6 to 10ft. in width. Northern Star Claims.—This property shows extensive ancient workings. It is in the vicinity of the Gondia and shows similar indications. Development is now proceeding. Hanover and Teutonic Claims.—This property has been worked most successfully by a small syndicate, and substantial dividends have been paid. The latest developments are satisfactory, but the property requires further opening out. Iron Duke Claims.—The first level has proved a pay chute of 400ft. long by about 31ft. wide, going just under 7 dwt."

Formal notice of extraordinary general meetings to consider the proposals accompanies the circular. The statement of assets and liabilities as at December 14, 1911, including Bulawayo accounts to October 31, 1911, is as follows:—Assets: Cash and loans, £116,263 11s. 8d.; cash to be received in respect of dividends declared not yet paid, £16,370 10s. 11d.; sundry debtors, including brokers for shares sold and not delivered, £290,252 1s. 2d.; foreign and Colonial Government and railway and other stocks, £48,206 6s.; claims, &c., £78,867 11s. 7d.; goodwill of agency business, £29,000; furniture and fittings, £1,693 9s. 1d.; stands and buildings, £12,601 18s. 6d.; stores, live stock, &c., £3,965 8s. 3d.; shares and interests in other companies: Quoted, £1,968,906 5s. 6d.; unquoted, £400,391 11s. 10d.; total, £2,966,518 14s. 6d. Liabilities: Sundry creditors, including brokers far shares bought and not yet paid for, £155,278 15s. 7d.; bills payable, £5,500; total, £160,778 15s. 7d., giving an excess of assets over liabilities of £2,805,739 18s. 11d.

ECONOMY IN FUEL.

Users of coal for domestic, business or steam-raising purposes are now recognizing the saving of time and money effected by using only the best Transvaal coal and this coal is mined from the Vaalbank (Middelburg) Colliery.

This coal, which can be obtained at about the same price as inferior coal, gives the highest heating value of any Transvaal coal, burns regularly and gives a minimum of ash or soot, and the fact that a trial order is always followed by repeat orders confirms the favourable opinions expressed by the present users of the coal.

Supplies of Vaalbank coal can be obtained from:—Johannesburg—A. E. Dunstone, Box 5034; The Holmes, Darcy Coal Agency Box 5176; Benoni—Lindsay & Pirie, Box 5; Unsted & Holland, Box 316; Webb & Co., Box 370; Boksburg—J. D. Campbell, 105, Commissioner Street; Germiston—C. A. Margach, Box 223; Heidelberg—L. Lowenstein, Box 175; Bloembof—J. Leviton; Kimberley—A. G. Freeman, Box 154; Pretoria—R. Butler & Co, Box 747; J. Franklin, Box 51; Middelburg—H. Laver & Co., Box 94; Lydenburg—M. McGee, Box 24; Pilgrim's Rest—J. H. Alcock, Box 36; Barberton—D. Wasserberg & Co., Box 167; Delagoa Bay—I. Sangiorgio-Borruso, Box 366; Pietersburg—B. Herman, Box 36.

NEW HEALTH REGULATIONS IN RHODESIA.

Vigorous Denunciation by Small Owners—The Rand and Rhodesia Compared

Much dissatisfaction is expressed in Rhodesian "small mine" circles at the new health and sanitary regulations for the mines, brought into effect by a recent Government notice. At a meeting of the Rhodesian Small Workers' and Tributors' Association, held at Hartley the other day, the new diet which it is stipulated that mine-owners shall give to natives came in for vigorous discussion, and the action of the Government in this direction was denounced in a most emphatic manner. Mr. E. A. Begbie, the chairman, in speaking against the new regulations, remarked:—

> They had to give the natives coming off shift coffee and cocoa in the mornings, and also double rations of meat, and they were told that what was necessary on the Rand was necessary in Rhodesia. The Association took exception to that statement. They knew that certain conditions of the mines called for certain remedies, and it was unnecessary for the legislature to thrust that idea down their throats, for they knew it. They held that what was necessary on the Rand was not necessarily applicable in Rhodesia. Furthermore, they would ask the Government if the regulations which were in force on the Rand were in force throughout the whole of the Transvaal? Were they in force on all the coal and tin and other mines? They would see, therefore, that there must be some discrimination. They asked that any mine which was exempt from sickness and high mortality should be exempted from taxation which would rule them out of existence. In certain mining areas they admitted that the flora and fauna of the country were disappearing, and it might be necessary on account of that fact, with greater depth being reached, to have a greater scale of diet than in mining with 25 or 100 natives on the veld. But if that scale were applicable to the mining community in every circumstance, why should it not be applicable to every employer throughout Southern Rhodesia—to the farmer as well as the miner? The Association absolutely refused to concur in feeding that scale of diet. They would now appeal against the regulations through the Resident Commissioner and the High Commissioner to the Secretary for State for the Colonies. They could have no compromise, for they had been met with a stone-wall refusal on the part of the Government. Their appeal, he believed, would have the sympathy of the commercial portion of the community, who realised that unjust taxation was going to handicap the small worker, to the detriment of the whole country. Many representatives of mining companies would also tell them that they disagreed with the ridiculous scale of diet just as much as the Association did. The meeting would, therefore, have to decide what form their protest should take.
>
> Mr. Olds said it was ridiculous to compare the Rand with Rhodesia. It was well known that the Rand mining was the most unhealthy mining in the whole of the world, leaving the natives outside of the question. There were 25 per cent. of the miners there who had only five years' life before them. The mortality here was between 5 per cent. and 8 per cent. amongst natives, whilst amongst the same natives working on the Rand it was 75 per cent. The natives here did not want nearly the same scale of diet as that which was in force on the Rand.

There is certainly a great deal in Mr. Begbie's speech to recommend it for a sympathetic consideration at the Colonial Office. Mr. Begbie is quite right on some points and wrong on others. We quite sympathise with his statement that certain concerns would be taxed out of existence were the new laws carried into full effect, and it is also only reasonable to hope for and expect the exercise of a certain amount of discrimination between different mines. Mr. Begbie is, we believe, incorrect in his insinuation that the regulations in force on the Rand are not universal in the Transvaal. We understand that these have been applied to all the mines of the Province. Mr. Olds has rather overstated the case, and gone out of his way to condemn the Witwatersrand. On the main issue we are, however, in total agreement with Mr. Olds—Rhodesia is a healthier mining field than the Witwatersrand.

RHODESIA BROKEN HILL.

A Complex Problem—Treatment Difficulties—Electrolytic Process.

The metallurgical problem of the Rhodesia Broken Hill mine still awaits a solution, despite the optimistic statements made about the middle of 1910, when the company was reorganised and a subsidiary treatment company was launched. There has, of course, never been any question as to the existence of very large quantities of ore in the mines. Here on a high plateau at an altitude of about 4,000 feet occur a number of kopjes, which have been proved by initial development work to contain very large quantities of mixed lead and zinc ores.

A Complex Problem.

The trouble has always been that the ores are so complex and so intermixed with one another that up to the present all efforts to work the proposition at a profit have proved a failure. There are factors in connection with the Rhodesia Broken Hill mine which encourage one in the hope that eventually a process will be devised which will admit of an economical and efficient separation of the metallic elements, but it cannot be denied that the immediate outlook in regard to Rhodesia Broken Hill metallurgy is not too hopeful. The parcels of ore at first sent to England were of simple composition, the principal mineral shipped being calamine. The quantity of free calamine existing in the mine was, however, soon discovered to be limited, and the shipment of trial parcels of mixed lead and zinc ores was then begun.

The Bradley-Williams Process.

After a great deal of disappointing research work, it was officially announced that the Broken Hill ores were amenable to treatment by what is termed the Bradley-Williams process. A first shipment of 44 tons of ore was sent to England for experimental treatment. The smelting works experts reported "the process offers more promise for the treatment of this ore than does any other method with which we are acquainted, but its details have not yet been fully worked out." In the Bradley-Williams process the essential principles of the process consist in subjecting a solution of zinc sulphate to electrolysis (thus depositing a small portion of its zinc contents, while acidifying the solution), and then dissolving the zinc out of the ore with this electrolysed solution. The solution is then again electrolysed and the cycle continued. A certain amount of sulphuric acid is consumed by constituents of the ore other than zinc, and thus lost, this loss having to be made good by the addition of fresh acid at intervals.

Another Method.

As a result of these experiments, the Bradley-Williams Company are erecting large treatment works on the Tyne. The final decision with regard to the Bradley-Williams method is subject to satisfactory results being obtained at the new works. The directors have, however, kept a free hand in this matter, and whilst these negotiations were in progress and afterwards the management of the company kept in communication with other important metallurgical firms. One of these firms has reported on samples of the ore as follows:—"From the small experiments which were first made on a laboratory scale, by leaching the ore with sulphuric acid, the results obtained were, from an electrical efficiency point of view, so encouraging that a further quantity of ore was supplied. The continued trials did not, from the leaching point of view, yield results so promising as at first, owing to increased leaching difficulties. This factor was found to be so serious that it was necessary to reconsider the whole problem, and to approach the subject of zinc and lead recovery by electric distillation." Owing to pressure of other work, the firm in question have not yet been able to complete these experiments, but hope to be in a position to report more fully at an early date. But whatever method of treatment which may be finally adopted for these ores it is certain that the cost of the power required will remain a heavy item in the total cost. The possible sources of power are the Victoria Falls, situate at 374 miles, and the Wankie Colliery, at 444 miles from the mines. They are both on the railway *en route* to the port of Beira. If from either of these a supply of power can be obtained at a sufficiently low rate which would still be remunerative to the supplier, a very great advance towards the realisation of the Broken Hill Company's hopes will have been attained. Pending the carrying out of further metallurgical tests, no work of any consequence is being done at the mine at present. There are thousands of tons of ore lying exposed and awaiting further treatment.

Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

Mooifontein Diamonds.

To the Editor, *South African Mining Journal.*

Sir,—I observe in the advertisement of a new company—Mooifontein Diamonds—a report on that property signed "A. F. Crosse." As I find that, among my friends, a natural misconception has arisen that I am responsible for that report, I shall be obliged if you will give publicity to the fact that I am not the "A. F. Crosse" who made that report.—Yours, etc.,

ANDREW F. CROSSE,
Consulting Metallurgist.

Rand Club, Johannesburg,
22nd January, 1912.

The Geology of the Witwatersrand.

To the Editor, *South African Mining Journal.*

Sir,—In reply to your footnote to my letter, in your last issue, in which you remark that "the Geological Survey have no concern with the payability or otherwise of the various conglomerate beds mapped out and correlated by them," kindly allow me to remark that if you will refer to the reports of the Geological Survey you will find in all of them, or at any rate nearly all of them, a chapter dealing with the "economical aspects" of the reefs of whatever district the report is concerned with. Now, sir, what do you understand by "economic aspect?" Has it nothing to do with the commercial value of the reefs? Their payability or unpayability in other words? Anyway, what would be the good of an expensive Geological Survey if it did not contribute knowledge helping forward the mining development of the country. In South Africa at any rate, geology is not an abstract or academical subject. The pioneers of the diamond fields, and the gold fields of South Africa were not geologists in the European acceptation of the term, but Nature's geologists, practical men, Boers principally, gifted with a keen sense of observation, on the lookout for any rock which appeared to them as likely to contain minerals of commercial value, and therefore I maintain that the Geological Survey, with their superior knowledge, should give greater attention to the economic aspects.—Yours, etc.,

SCOTT ALEXANDER,
"Rand Stratigraphist."

Johannesburg, January 24.

[Mr. Scott Alexander has not quite grasped our meaning. It was that the Survey was not likely to be influenced in its work of mapping and correlation by the fact that certain strata were payable or otherwise. The whole work of the Survey is, of course, intended to serve a useful economic purpose.—Ed. *S.A.M.J.*]

Johannesburg Consolidated.

DATE OF ANNUAL MEETINGS.

To the Editor, *South African Mining Journal.*

Sir,—We beg to advise you that it has been decided that the annual general meetings of shareholders of the undermentioned Companies of the Barnato Group of Mines will in future be held not later than the end of May in each year, in order that European shareholders may be provided with copies of the reports and accounts at least six weeks before the holding of the meetings. It has been the practice for some years to hold the meetings of the Companies about the end of March:

Consolidated Langlaagte Mines, Ltd.
Ginsberg Gold Mining Company, Ltd.
Glencairn Main Reef Gold Mining Co., Ltd.
Government Gold Mining Areas (Modderfontein) Consolidated, Ltd.
New Primrose Gold Mining Co., Ltd.
New Rietfontein Estate Gold Mines, Ltd.
New Unified Main Reef Gold Mining Co., Ltd.
Van Ryn Deep, Ltd.
Witwatersrand Gold Mining Co., Ltd.

Will you kindly publish this letter?—I am, etc.,

For JOHANNESBURG CONSOLIDATED INVESTMENT CO., LTD.,
Secretaries.
FRANK HALL.

Frank Smith Diamonds.

EQUIPPING THE EBENEZER.

Tenders are invited for the erection and completion of a diamond washing plant at the Ebenezer Mine, Koffyfontein, which has been acquired by the Frank Smith Company. Plans and specifications may be seen and all information obtained from the secretary of the Frank Smith Diamond Estates and Exploration Company, Ltd., Basement, Consolidated Building, Fox Street, Johannesburg.

MINING EXAMINATIONS.

Private individual tuition for Mine Managers', Mine Captains', Mine Surveyors', Mechanical Engineers' and Enginedrivers' Examinations, Practical Mathematics and Electrotechnics. Correspondence lessons where personal tuition is impossible.—E. J. MOYNIHAN, Consulting Engineer, 10, Anglo-Austrian Buildings, Box 2061, Johannesburg.

MEASURING AIR-FLOW: FERREIRA DEEP MASTER-METER.

How Pressures Are Tested—The Device Described.

On the invitation of the Central Mining and Investment Corporation, Ltd., and the Rand Mines Power Supply Co., Ltd., members of the South African Institute of Engineers visited the air meter testing laboratory at the Ferreira Deep mine on Saturday afternoon last. The standard meter for measuring flow of air is a simple displacement meter, having three double-acting pistons, 36in. diameter by 27in. stroke. The inlet and outlet of the air to the cylinders is regulated by piston valves actuated through eccentrics on a crank shaft, driven by piston rods, crossheads, and connecting rods. These valves open and shut while the pistons are passing the dead centres on the crank shaft. The crank shaft actuates the recording mechanism and revolution counter. The meter has already been briefly described by Mr. Hodgson in his paper read before this Institution ("Journal," S.A.I.E., vol. X., No. 1, August, 1911). The air circuit of the plant as erected at the Ferreira Deep is as follows:—From the outlet end of the meter the discharge pipe connects to the suction end of a Rateau fan, belt driven by a 50-h.p. motor; the delivery of the fan passes through a receiver with tubes, exactly similar to a steam surface condenser; this receiver can be used to cool the air by using a water circulation through the tubes or heat the air by a steam circulation; thence the air is led by a pipe to the meter to be tested; through the meter, and thence to a receiver to equalise pulsations, and thence back to the inlet end of the master meter. The whole system may be charged with air up to a pressure of about 120lb. per square inch in two ways: (1) By a small high-speed compressor geared to 30-h.p. motor, which delivers air into the pipe outlet behind the master meter; or (2) by opening a valve in a branch pipe from the air mains of the Rand Mines Power Supply Co. When the system is charged with air at the required pressure, it is isolated, and the Rateau blower circulates the air through the meters. It thus remains, then, only to compare the records of the meter to be tested with that of the master meter. Any slight leakage of air from the system is made up by the small high-speed compressor or by introducing air through a small pipe from the Power Company's mains, this small amount of air being regulated by a valve to keep the pressure constant.

Methods of Testing Pressures.

The pressure in the system during a test are taken as follows:—(1) The main pressure at the inlet to the master meter is taken by a special Bourdon tube gauge, which has no gears to introduce lag into the pointer (which is a balanced long arm), and all pivots are hardened steel taper pins. This gauge is adjusted before each test by means of manometers, as follows:—(a) Difference from master meter inlet to outlet, thus showing drop of pressure in master meter; (b) difference between master meter inlet and inlet of meter being tested, giving pressure at inlet of meter under test; (c) difference between inlet and outlet of meter being tested. There is also another independent gauge at the meter inlet, so as to check the main gauge. Thermometers are placed at the inlets and outlets of master meter and meter to be tested. Atmospheric pressure is taken by a standard mercurial barometer (with Kew and local Observatory certificates). A revolution counter graduated to the tenth of a revolution gives the measure of the piston displacement. After erection of the plant at the Ferreira Deep, the degree of accuracy of the master meter, as far as leakages past pistons, valves, stuffing-boxes, and all joints are concerned, was tested by means of allowing air to blow away through small rounded orifices fixed in the outlet end of the meter, the meter being supplied with air from the mine. Orifices of $\frac{1}{4}$, 3-16, and $\frac{1}{8}$ inch diameter were used. Calculating the discharge of these orifices on Fliegner's formula and comparing the results with the record of the meter, the apparent leakage varied from 0.002 to 0.007lb. per second at 60lb. square inch gauge pressure. As the flow through a 1-16in. diameter orifice would be about 0.008lb. per second, such an orifice was tried, and the meter recorded one revolution in 28 minutes 25 seconds, giving a flow of 0.004lb. per second, as against a calculated flow through the orifice of 0.0088lb. per second. At certain other times the 1-16in. orifice was also tried, but the meter would not always record a full revolution, a point being reached where leakage just balanced the flow. The maximum error of the meter, due to leakage losses, may therefore be taken to be 0.008lb. of air per second at 60lb. gauge pressure, and the nominal capacity of the meter under the same conditions of pressure is 17lb. per second, so that the leakage error is less than 8 parts in 17,000, because other tests showed that the absolute amount of leakage decreased as the flow measured increase.

The Original Design.

The original design of this meter is due to Mr. A. Robeson, late consulting mechanical engineer to Messrs. H. Eckstein and Co., and was in part worked out in the drawing office of the firm under the direction of Mr. J. A. Frerichs in 1908. It was built by Messrs. Fraser and Chalmers, at Erith, England, in 1909, and was erected in the shops at Erith, and experimented with by Mr. J. L. Hodgson on meter tests in 1909-10, and finally erected at the Ferreira Deep about the middle of 1910. The cost of the installation, including the meter, accessory machinery, piping, house, workshop, instruments, and tools of all kinds in the testing station, is about £7,000. The meter is capable of measuring a capacity of over 2,000 k.w. of air power when air is measured at 110lb. gauge pressure, equivalent to a capacity of 20.000 cubic feet of free air per minute or, say, 200 rock-drilling machines with $3\frac{1}{2}$in. diameter pistons. The plant as in operation during the visit of the members of the Institute has a 16in. Kent-Hodgson air meter in circuit. This meter is intended for the Modderfontein "B" Gold Mines, where electrically operated compressors are installed. As the air from the compressors is not cooled, this meter is fitted with a temperature correcting device. A similar meter has already been installed at the New Modderfontein G.M. Co. The meter itself, although capable of registering up to a capacity of 3,000 k.w., takes up no more room than a 16in. teepiece, being only 38in. long, but the special pipe to contain the temperature correcting device is 9ft. long, giving an over-all length of about 12ft. A 10-in. meter for the Baotjes Consolidated, Ltd., of similar construction, is lying open for inspection outside the test-house. In conclusion, it might be mentioned that the master meter installed at the Ferreira Deep has been agreed upon as the primary standard for measurement of air power between the Rand Mines, Ltd., representing the contracting companies of the Central Mining—Rand Mines groups and the Rand Mines Power Supply Company. The meter installed by the Power Company to measure the air power supplied to the Ferreira Deep mine is a 10in. Venturi, having a capacity of 720lb. of air per minute at 100lb. gauge pressure, or air for the equivalent of 90—$3\frac{1}{2}$in. drills

---

New Star Diamonds: Interim Report.

The directors of the New Star Diamond Company have issued the following interim report upon the present position of the property:—As a result of the trial washings which have now been concluded the new manager advises that whilst the results have been highly satisfactory the machinery is at present badly arranged. It is spread over a large area of the company's ground, with the result that working costs are unnecessarily high. It has, therefore, been decided to move the plant to a point on the north of the mine adjacent to the head of the doubled inclined tramway, from the foot of which single tram-lines are laid to the various parts of the mine. The concentration of the machinery at the head of the incline will enable the manager to effect very great reductions in working costs and increase the capacity of the plant. His anticipation is that he will be able to keep the washing-plant at full work at low cost. In view of the outlay involved in these alterations of the surface equipment the directors have thought it desirable to strengthen the financial position of the company, and have accordingly decided to issue 1,000 of the reserve shares. The proceeds of this sale (£1,000) have now been received and placed to the credit of the company. There will be two pans at work (16ft. and 14ft.), the third being held in reserve for check washings. The manager hopes, however, that in spite of the heavy nature of the deposit he will be able to wash more than 400 loads per day. Assuming the monthly washings to be from 8,000 to 10,000 loads, the yield to shareholders should certainly be satisfactory if the basis of the experimental washings should be realised.

The Market for Mica.

Messrs. Baker and Startin, mica brokers, of 19 St. Dunstan's Hill, London, E.C., in their review of the mica market during 1911, state that the supplies of all grades of block mica have fallen short of the demand, with the result that prices at the close of the year show an advance of fully 25% all round, and they anticipate no material alteration in values for some time to come. India, as usual, furnished the greater bulk of the shipments, whilst Canada, Africa and South America have each contributed their quota. The European demand has been brisk throughout the year, and trade with U.S.A. is also slowly improving. Stocks of unsold mica at the close of the year are very low, and consist chiefly of Bengal splittings. The following figures are compiled from the returns of the London Warehouses:—

	Arrivals.	Deliveries.	Total Warehouse Stocks, Dec. 31, 1911
Cases (avg. 1 cwt. each) 1911	23,236	20,972	7.502*
Cases as compared with 1910	18,995	22,841	5,238
Cases as compared with 1909	19,929	21,878	10,174

*Including purchases uncleared,

SOUTH AFRICA'S MINERAL OUTPUT.

Points from December Returns—Gold, Coal, and Base Metals—Valuable Statistics for the Union.

According to Mines' Department reports, the mineral output of the Union of South Africa for last month was of the value of £3,271,306, showing a decrease of £15,989 as compared with the output for the previous month. The details are as follows:

	November.	December.	Increase.	Decrease.
Gold	£3,062.004	£3,012,705	—	£49,299
Silver	8,461	8.217	—	244
Coal	161.277	150.555	—	10,722
Other minerals	55,553	99,829	£44.276	—

GOLD OUTPUT.

The following table shows the number of mines working in the various districts declaring gold and the district outputs in December:

District.	No. of Mines.	Stamps at work.	Tube mills at work.	Output, Fine Gold. Ozs.
Witwatersrand	63	9,585	242	680,655
Heidelberg	3	125	2	6,976
Klerksdorp District	6	90	4	2,862
Ottoshoop	1	10	0	79
Barberton District	13	266	4	7,079
Pilgrim's Rest	14	170	4	11,283
Pietersburg	3	20	0	212
Totals for Transvaal	103	10,266	256	709,148
Cape	—	—	—	2
Natal	1	5	—	99
Totals for the Union	104	10.271	256	709.250

Progressive Totals.

(Since commencement of Union).

	Transvaal. Value. £	Cape. Value. £	Natal. Value. £	Union of S. Africa Value. £
1910—				
June to December	19,098,807	316	9,786	19,108,909
1911—				
January to June	16,871,576	153	4,536	16,876,265
July	3,022,904	9	562	3,023,475
August	3,030,538	7	667	3,031,212
September	2,973.511	14	391	2,973,916
October	3,006,438	107	370	3,006,915
November	3,061,637	10	357	3,062,004
December	3,012.273	11	421	3.012.705

COAL OUTPUT.

The following is a summary of the operations of the coal mines during the month:—

District.	No. of Collieries producing.	Tons mined.	Tons Coal sold.	Value per Ton. Pit's mouth. s.	d.
Springs-Brakpan area	5	73,354	53.648	5	6
Middelburg	13	307,487	258.262	4	5
Other districts	8	38,404	34.637	4	0
Transvaal totals.	26	419.245	346.550	4	6
Cape	9	10,425	6.866	10	6
Orange Free State	5	52.555	39,917	5	6
Natal	22	280.598	207,120	5	5
Totals for the Union	62	762.823	60,453	—	

Progressive Grand Totals.

(Since commencement of Union.)

Period.	Tons sold.	Value at Pit's mouth. £
1910—		
June to December	4,160,755	1,123,549
1911—		
January to June	3,715,907	959,247
July	667,222	171,445
August	682,358	173,518
September	650,178	164,877
October	642,751	161,590
November	638,553	161.277
December	600.453	150.555

COPPER AND TIN.

The following is a statement showing the output of tin and copper for December:

Copper.

	Output. Tons.	Shipments. £
Transvaal	90	—
Cape	1,138	64.665
Totals for the Union	1,228	64.665

Tin.

	Output. Tons.	Shipments. £
Transvaal	215	18,549
Cape	2	277
Totals for the Union	217	18,826

Progressive totals of sales and shipments for the Union:—

	Copper. Tons.	Copper. Value. £	Tin. Tons.	Tin. Value. £
1910—				
June to December	9,627.667	228,036	1,774.500	176,743
1911—				
January to June	12,311.762	292,570	2,073.440	248,810
July	2,530.800	62,370	392.434	45,152
August	638.300	16,909	228.899	24,970
September	389.000	11,029	215.171	23,005
October	4,210.500	94,595	231.030	26,323
November	454.000	13,445	238.430	27,958
December	2,574.000	64,665	175,426	18,826

OTHER MINERALS.

Sales and shipments of minerals (other than gold, coal, copper, and tin):—

	Tons.	Value.
Asbestos	312.193	£5,262
Graphite	4.020	88
Magnesite	44.000	100
Manganese	—	—
Lead	16.000	174
Zinc	6,000	51
Lime	5.679,000	9.669
Flint	143.000	994
	Ozs.	
Silver in gold bullion	74.725.774	8.198
Silver in other minerals	186.000	19

LABOUR RETURNS.

The following statement shows the number of persons in the service of companies and companies' contractors at the end of December:

Gold Mines.

	White.	Coloured.
Witwatersrand area	24.240	183.486
Heidelberg Mining District	236	2.974
Klerksdorp Mining District	155	1.345
Ottoshoop Mining District	143	1.192
Pretoria Mining District	842	10,191
Barberton Mining District	319	3,718
Pilgrim's Rest Mining District	321	4,267
Pietersburg Mining District	232	2.551
Springs-Brakpan area	91	1,632
Middelburg area	328	6,580
Other districts (Coal)	71	875
Totals for Transvaal	26,978	218.811
Cape	2.995	16.983
Orange Free State	1.176	13.055
Natal	552	10,795
Totals for the Union	31,701	259.644

Progressive Totals.

1911.	White.	Coloured.
July	32,502	274.408
August	32.409	270.963
September	32,223	269.500
October	32,079	267,705
November	31,820	263,884
Totals for the Union	31.978	259,643

ACCIDENTS.

During the month 200 accidents occurred in the mines throughout the Union as the result of which 4 white and 71 coloured workers were killed, and 31 whites and 122 coloured workers injured.

Progressive Totals.

	No. of Accidents.	Killed. Whites.	Killed. Col.	Injured. Whites.	Injured. Col.
July	249	7	78	32	168
August	259	11	90	27	172
September	264	6	71	34	180
October	227	8	81	39	143
November	253	11	83	35	195
December	200	4	71	31	122

THE COMBUSTION OF COAL.—II.

A Plea for an Official Enquiry into the Use of Transvaal Coal in Boilers.

[By Kenneth Austin.]*

It will, of course, be pointed out by those who give serious attention to the matter that all the established tests are quite sufficient to prove that nothing better can be attained, that the alleged boiler efficiencies are high; but the author is not satisfied to accept any such opinion. The present methods, the best methods of mechanical stoking, are, although a great improvement on the laborious hand firing, not the "last word" on the subject. Better results will be secured after proper enquiries have established the right direction in which further economies may be made, and after the laws which relate to the most perfect combustion of coal have been established. The exact testing and analysis of coal by "bomb" and other methods are extremely useful, but they are never intended to show more than that the fuel has a certain known commercial value.

By the establishment of further enquiry, the author is of opinion that an alteration in the shape and sizes of the parts where the combustion takes place will produce greater economy. Berthelot's standard value of one pound of pure carbon was 14.652 B.T.U., of which probably 4.000 or 5.000 B.T.U. are generally needed (or even a larger value) for the purpose of converting the hard pure carbon on the open grate to the gaseous form of CO; probably there are further large losses through the deadening effect of CO2. Cannot some of these losses be prevented by re-designing the coal-burning plant? The total thermal value of hydrogen is 62,025 B.T.U.; the percentage in coal used in the Transvaal is only from 4 to 5, some of which is formed, by combination with oxygen, into water vapour, which circulates in the *fire* spaces of the boilers; the greater part of the hydrogen available should be worth utilising to the fullest extent. If comparison is made with the constituents of a petroleum oil, which is made up of 86 per cent. of carbon and 14 per cent. of hydrogen, it will be seen that the thermal value is roughly as follows:—

Carbon ... ... 86% × 14.652 = 12,600 B.T.U.
Hydrogen ... ... 14% × 62,025 = 8,683 ,,

Total thermal value is approximately 21,283 B.T.U.

This shows the approximate value of hydrogen in petroleum, and a calculation of the value of the hydrogen from the analysis of any particular coal would also show whether it would be more economical to recover it as a valuable hydro-carbon by-product, or burn it in the present careless fashion. The author has generally stated the purpose of his enquiry, and, with a view to indicating what might be done with the present knowledge on the subject, he illustrates a battery of ten boilers arranged in the usual conventional manner.

In such a scheme the supply conduit of suitable size from one of the CO producers would feed two boilers, and the supply conduit of suitable size, "A," would convey heated air to the combustion chamber, both supplies being regulated to ensure perfect suction and perfect combustion.

The combustion chamber would be formed with a reverberatory arched bottom, immediately under the boiler tubes, or drums, according to the design adopted. The boilers would not be provided with grates, and no spaces would be left open for the air to casually leak in anywhere. The rate of progress of the gas and products of combustion would be adjusted by the regulating gear fitted to the "Schwabach" or similar type of exhausting air displacement or ejector plant placed near to the outlet, or at the base of chimney a centrifugal water pumping plant would provide for the necessary displacement of the products of combustion. The incoming air for the support of combustion would be alternately passed through the air flues, "R." Obviously, regulating valves would be required at various parts of the plant, but they are not indicated on the sketch. The regulation of all valves would be made from an operating platform similar to that now used so successfully with the "Butters" filter plants, where any number of distant valves are opened and shut with ease and certainty by hydraulic means, or compressed air, operating on pistons suitably attached to the valves, all being dependent upon the operator, who would be guided by the temperature and other instruments provided. It may be generally stated that in the present arrangement of boilers a large excess of cold air is admitted to the grates, which air has to be heated up to the same temperature of the heated gas in the hottest part of the boiler before it can be discharged into the flues. The advantage of such an arrangement as that sketched out by the author would be that once the fuel was loaded on to the conveyor belts from the railway trucks and dropped into the mouth of the producers no further hand labour would be needed in the boiler-house beyond that required to keep the inclined and rotated open hearth producer grates free from dust and ash. The "Campbell" open hearth producer is an illustration of what is now being effectively done in the utilisation of bituminous coal. The discharge of the tar or other liquid by-products would be effected by gravity.

Beyond the careful observation of the instruments and the supervision of the gas and air supplies, and the necessary regulation of the valves, before referred to, very little skilled labour would be wanted in the boiler-house.

Those in charge of old plants will realise that many of the present insurmountable causes of strain and much of the irregular expansion and contraction of boilers would be overcome; many of the causes of failure would be entirely eliminated, and the cost of repairs and stoppage for same would be reduced, and the life of the boilers would be greatly increased.

If it were decided to lay down a new boiler plant without any consideration for old or existing conditions, then engineers would of course consider whether the present design of boiler was most suitable for the arrangement as proposed by the author.

This proposal is not put forward as a final "cut-and-dried" scheme; it is a typical scheme sketched out to suit present conditions without having to "scrap" a lot of material which could be used. The author has suggested that further enquiry and the establishment of a proper testing plant will probably bring to light many new facts which will lead to the proper treatment of Transvaal bitumenous or semi-anthracite coal, so as to prevent further waste and secure some of the valuable products which are now imperfectly used or are entirely dissipated, never to be recovered again.

The great progress made during recent years in all metallurgical operations is most remarkable, specially when an examination has been made as to the great economy of fuel, and the regulation of humidity in the air admitted to blast furnaces used in the production of iron. It will be realised that while these changes have been made in all directions the principles and methods of firing boilers are the same to-day as they were in the beginning of engineering history. The author suggests that even the existing plants can be improved by making arrangements to warm the air before admitting it to the boiler, as indicated. The fullest advantages to be obtained can only be arrived at by the adoption of a careful system of measurement and enquiry such as suggested; but it is quite obvious that the practice of admitting air in the winter time, at a temperature of 40° Fah. or less, all of which has to be heated up to the temperature of somewhere about 2.000° Fah.—the temperature of the combustion chamber—should if possible be avoided.

Engineers point with pride to the advantages which they have obtained by utilising the waste heat in exhaust steam, either by means of condensers, or by water heaters, and it would appear that if it can be done, as suggested, some attempt should be made to utilise, by some re-arrangement, the wasted heat in the conduits, which is now doing work in creating what is known as "draught"—in other words, displacement of CO2, which operation, in the opinion of the author, can be done by more economical methods, and also allow for new arrangements to be made for the combustion of coal. Doubtless there will be—in criticism of the author's suggestions—references and recommendations to such balance sheets of boiler results as collected by prominent engineers, who have made tests, such as Thurston and others. The author, however, does not see what useful result would be attained by discussing such, as the details cannot be checked or verified. It is therefore necessary to institute tests, and to make correct measurements, with the most efficient and modern instruments of precision, in order to arrive at a true statement of the facts observed. The author submits that if the subject is properly examined, better results can be arrived at, even with our present imperfect arrangements, and that further economies, at present considered impossible, will also be obtained. The author has referred to a testing plant, and stated the purpose for which it would be used. The details of such a plant could be safely left to those in whose charge it was placed, for it is certain that once the work of actual enquiry and experiment has been started and the results published, nothing could stop the effect of the discovery of the new and valuable information. The testing plant would naturally begin at the producer, and end at the discharge outlet of the plant; it would be provided in *every part* with the fullest equipment of instruments for continuously measuring every physical and chemical change or by-product. The cost of the plant need not be considered, for no matter what it cost the information obtained, and the economies which would be established, would more than repay the expenditure. In his opening remarks the author indicated that the conservation of the natural resources was of considerable importance, and as the object of the testing plant would be primarily for the purpose of conservation, the testing should be done by, and the plant should be controlled by those who are responsible to the nation for the conservation of the national health and wealth. It may be mentioned here that the leading scientists and commercial men in the United States of America have already recognised the great harm which has been done by indiscriminate individuals in the destruction of national resources, one of which is coal, and have formed themselves into a body to prevent such waste. A precedent has already been established in the Transvaal for the establishment of a public coal testing plant, such as proposed by the author. The physical laboratory on the Witwatersrand, which contains some of the most perfect testing machinery obtainable, is in the hands of the most capable scientists, Government officials, whose work has been the means, indirectly, of saving much life and property. The known deposits of fuel in the world are slowly but surely being exhausted, and the fuel is being wasted. Although there is alleged to be too much coal in the Transvaal, it is the duty of every public spirited person to conserve and develop all the natural resources, which may now be neglected or wasted by the indiscriminate individual, who may be in ignorance of what he is doing. The difficulties which at one time existed in getting correct instruments to record temperatures, measurements, chemical changes, etc., no longer exist. The Auto-CO2, and the Bi-meter CO2, recorders give the most valuable assistance at the present time, and if the use of the Féry radiation and other reliable pyrometers were further extended, they would, if correctly calibrated, throw the old time methods of "estimating" high temperatures into disrepute, and help very much in arriving at the necessary facts which would be disclosed in the testing plant as proposed. At the present time there is very little information of a reliable nature about the losses of heat through walls of flues and other parts of boilers; the prevention of such loss is very desirable, and one of the most valuable economies to be obtained is in this direction.

---

* Paper read before S.A.I. of E., Jan. 13, 1912.

In submitting these proposals for the consideration of the Institution of South African Engineers the author recognises that it is beyond the power of any of its individual members to establish the extensive and exact system of testing which he has advocated, but the members can, with their valuable advice and experience, by their serious consideration of these proposals help very much in arriving at a proper conclusion as to the proper methods to be adopted in order to effect the economical combustion of coal.

ANCIENT MINE WORKINGS IN THE TRANSVAAL.

The Dawn of South African Mining—Interesting Statements by Mr. Trevor.

Ancient mine workings in the Transvaal formed the subject of a paper by Mr. T. G. Trevor, at last Saturday night's meeting of the Chemical, Mining and Metallurgical Society. He said it was not generally realised that similar workings to those in Rhodesia, which had attracted world-wide attention, extended into the Transvaal. The modern Bantu tribes of this Province undoubtedly worked copper and iron mines, and possibly gold also, but there was no evidence that they knew of the existence of tin. Ancient workings belonged to another class. He had found them through the northern districts down to the edge of the High Veld. They were plentiful in Zoutpansberg, Waterberg, North Rustenburg, and North Middelburg districts, and to a lesser extent in Lydenburg and Carolina. The present appearance of ancient workings was nearly always a line of clumps of bush and timber growing far denser than on the surrounding country. When one penetrated these clumps one found them growing in a series of artificial depressions up to 40ft. deep. Each depression was surrounded by a very small dump or embankment of a size quite inadequate to represent the waste that must have been excavated. When sinking to prospect in the depression one invariably found that the original working had not fallen in or been washed full of debris, but had been deliberately filled in with material from the dump, and in some cases this had been done so thoroughly that no idea of the presence of ancient workings was entertained till they were struck in a shaft from 40ft. to 80ft. below the surface. In this case the filling in must have been done to disguise the existence of the mine, but in others, where it was not carried to this point, it may have been done from superstition or to prevent others from obtaining ready access to the mine.

Other Traces Absent.

In no case could any roads, ruins, or other traces of the workers be found, nor was there ever any sign of anything in the nature of a tailings heap or important slag heap. At Messina, Palabora and most of the ancient copper mines very small slag heaps, containing only a few tons in the aggregate, could be found at the base of the kopjes in the neighbourhood, but these bore no more proportion to the amount of ore, that had obviously been mined, than the slag from the assay office would to the output of a modern copper mine, and as the foundations and twyers of native forges and the foundation rings of native huts were found with these slag heaps, Mr. Trevor attributed these heaps to modern native workers. At Rooiberg, some distance from the mine there was a hill, now known as "Smelting Kopje," on which there was a small accumulation of tin slag, but no signs of any ancient habitations remained. An ingot or furnace bottom of tin, weighing some pounds, was also found on this hill. No other smelting places had yet been found in the Rooiberg Tin Fields, and the amount of slag on the hill mentioned was quite disproportionate to the quantity and size of the workings in the neighbourhood. In all the ancient workings many hammer stones were found. These were usually hard waterworm stones which had evidently been used for striking metal gads as they were worn out in cup-shaped holes at the striking points. No attempt ever seemed to have been made to mount them on a handle. Large stone mullers up to 100 lb. in weight had also been found. These were probably used for roughly grinding or breaking up the ore broken from the face with the gads. In the Rooiberg Mine some metal gads were found; these were of iron about 18 in. long and of rough dumb-bell section made in one continuous taper from the head to a fine point.

Clean Work.

One of the most peculiar points connected with these workings was the extreme cleanliness of the dumps and the difficulty of determining till the holes were thoroughly opened what the metal mined for was. In the dumps at Messina, Palabora and other ancient copper mines it was almost impossible to discover a fragment of ore and often quite a time had to be spent in finding even a stone stained by copper. At Rooiberg so little tin had been left in the dumps that the workings were for years supposed to have been made for iron. Where gold had been worked the same thing was noticeable, it was usually impossible to get a colour out of any rock left behind at or near the surface. There were still many groups of ancient workings which had never been satisfactorily opened, and it was impossible at present to tell for certain for what they have been worked. Just as little or no ore was left in the dumps so also was every fragment of ore taken out of the reefs down to the depth at which the working was abandoned, and where there were ancient workings it is quite useless looking for anything but barren reef left in situ on the surface. In Rhodesia where great experience had been gained of reopening ancient workings these were seldom now reopened without satisfactory results being obtained, but Transvaal engineers and prospectors had not yet studied the question, and in nine cases out of ten work was abandoned before anything was proved or any information was obtained. In the case of Messina Mine, more than two years' work was done before the real run of the deposits were discovered, and in the meantime one large Rand company had thrown up their interest in disgust and it was only the faith of Mr. Grenville, who had had experience of ancient workings in Rhodesia, that saved the property from abandonment. On some farms, where there were as big old workings as at Messina, thousands of pounds had been wasted without any results, because the prospectors worked without considering what the proposition in front of them was. Mr. W. H. Struben told the author that there were large old workings in the Theta Reef when this was first worked—from 1870-1880—and that he himself bought the farm on which the Clewer Mine now stood, purely on the strength of these workings. Modern work had, however, completely obliterated these ancient workings. Nothing was known of the people who worked them, for native traditions spoke of the mines as being long abandoned when their ancestors entered the Transvaal.

Tin Workings.

The modern Rooiberg Tin Mines were discovered by reopening a group of ancient workings. These workings appeared as insignificant pan-like hollows covering quite a large area. In the aggregate it could easily be that 100,000 tons of rock had been turned over there. As the poorest tin ore found in these workings was not less than 20 per cent. tin, quite 1,000 tons of tin must have been derived from them. The workings appeared to have been on more or less horizontal flats or shoots, and not to have extended to any great depth—40ft. or 50ft. probably being the maximum.

At Weynek a reef inclined at an angle of about 30 degrees had been mined out by the ancients down to some 200 feet from the outcrop, the outcrop itself having been first opencasted to a vertical depth of, say, 20 feet. Such pillars and fragments of ore as were left near the surface were quite rich in tin, and the amount of tin extracted might well have been several hundreds of tons.

On Leeuwpoort, as on nearly all of the farms in the neighbourhood there were many small groups of ancient workings, but none of these had been successfully opened yet. On the hill behind the camp, however, where no trace of an ancient working could be seen on the surface, a shaft of 40 feet broke into some large excavated chambers; some of these were empty, but some had been filled in. The excavations had evidently followed the run of certain very rich pipes or chutes of tin ore—what remained of the ore on the sides of the working was nearly pure cassiterite. Most of the filling had been put in artificially, and wherever the opening from the surface was it was certainly so well disguised as to be quite indetectable. It was impossible to estimate what amount of tin these Leeuwpoort workings might have accounted for, but if they said that the whole of these tin mines in the Rooiberg area could not have accounted for less than 2,000 or 3,000 tons of tin they were not overstating the case. The only known sign of ancient occupation other than the actual mines were the slag-heaps at Rooiberg on the hill known as "Smelting Kopje."

Bronze.

Mr. Schoch, the manager of the Rooiberg mine, has kindly supplied the following analysis of a piece of bronze obtained from a small slag-heap on the farm Blaubank, near the Rooiberg mine: Copper, about 80 per cent.; iron and alumina, about 5 per cent.; tin, about 7 per cent.; nickel, about 3 per cent.; arsenic, about 2 per cent.; gangue, about 3 per cent. The piece was about $\frac{1}{4}$ to $\frac{1}{2}$ lb. in weight, and was unformed, appearing to be more like the overflow of a crucible than anything else. The ingot or furnace bottom of tin now in the Geological Survey Museum, Pretoria, was also discovered in the vicinity. Concerning the bronze, there was no known ore in the Transvaal that by simple smelting would yield such an alloy, nor was there any copper mine known in the immediate Rooiberg district. As the composition was that of an excellent bronze it was impossible to doubt that the alloy was intentionally made of a definite composition and was not an accidental production. It was perhaps unnecessary to remark that there was no evidence of any native race south of Benin and the Gold Coast being acquainted with either tin or bronze.

THE SHAPE OF A SHAFT.

Shafts Rectangular, Oval or Circular—The Prevalence of One Type in Certain Districts Largely Due to Custom—Rectangular Shafts Comparatively Few Advantages—Circular Shafts Urged as Safer and Cheaper.

[By E. Mackay Heriot.]*

Some time ago the statement was made in the columns of the *Journal* that it would be interesting to know why certain districts characterized by similar conditions adhere so strongly to one special type of shaft. So far as I know, no attempt has been made to answer this question. As a rule the English colliery pits are circular, the Scotch rectangular, and in Wales oval and elliptical are often met with. The German coal and salt fields now use the circular form, whereas rectangular shafts are most common in the United States. In ore mining shafts are generally of the latter shape, but there are exceptions, such as the Cartagena lead-zinc mining district, where circular forms are used.

Rectangular Shafts Sometimes Necessary.

Rectangular shafts are necessary where timber is to be used for shaft lining or where the shaft is sunk on an incline in the ore deposit; under other conditions round shafts are more advantageous. In the first place they are safer in bad ground; the difficult, tedious and costly cutting out of the corners is avoided; the walls are more secure and permit of equal pressure all around from the country rock, and also from water when waterproof lining is used. It is not necessary to discuss elliptical shafts because they do not offer the advantages that the round ones do. Polygonal shapes owe their existence to provisional timbering, previous to walling. While timber is considered the easiest to place, of the different kinds of lining, this is not always the case; in many places it is undoubtedly cheapest in first cost, that is to say, when no retimbering is necessary. In coal mines timber has its disadvantages on account of the fire danger and also because of the wreckage following an explosion, which makes rescue work almost impossible. In the Westphalian coal field, out of a total of 428 pits, 238 were circular in shape, 189 rectangular and one elliptical. In the potash industry of Germany all the shafts are circular and some of these must be numbered among the greatest achievements in shaft sinking.

Speed of Sinking.

Leaving the inflow of water out of consideration, the speed of sinking a shaft depends on the time it takes to clean up after blasting. During the sinking of the No. 2 shaft at the Solvay works, in Germany, 100 m. of disturbed ground were passed through; the circular shape of the shaft permitted placing the end drills perpendicular and close to the walls of the shaft without doing these damage, and in this way the ground was always shot away toward the centre, leaving the walls intact. With rectangular shafts this would not have been possible under similar circumstances, as the walls would have to be straightened by the aid of picks. There appears to be an idea that colliery shafts should be circular in form and ore-mine shafts rectangular. There is no adequate reason to confirm this. It is essential to give a shaft a certain security and durability with the lowest possible cost. While speed is a prime factor, nevertheless speed is in itself a saving. The question is, what system of sinking will fill these conditions?

Keeping out Water.

As regards water-tight shafts, if any water-bearing strata are encountered after 70 m. depth, iron tubbing must be used, as no masonry can keep out water under a pressure of over seven atmospheres. The water will leak through any thickness of bricking. In this case the shaft must have a circular shape. The advantage of shutting out water from a mine is obvious. This, however, can usually be done only where the mineral deposit is in the form of a seam, such as coal or salt. In the earlier days shafts were sunk with temporary lining to any depth, straight to the dry zone, and afterward were relined. Modern practice is to sink such a shaft in series, that is to say, sinking operations continue only to that point below any water-bearing strata where a wedge-crib or supporting wall can be placed successfully. After the temporary lining has been replaced with the permanent one, and the water thus shut out, sinking is again resumed until the shaft is below the next water inflow, and so on until the dry zone is reached. Several rectangular concrete shaft linings have been constructed in the United States, and the oval and elliptical forms are quite generally favoured.

Less Excavation for Circular Shaft.

Circular shafts, although not as economical in speed, need less thickness of concrete and, therefore less excavation. Reinforced concrete has clearly demonstrated its strength and cheapness for shaft lining in Upper Silesia; it has shown itself superior to ordinary masonry in resisting pressure, but inferior to it in keeping out water. The concrete linings are made behind 2-in. timber, and vary between 12 and 20in. in thickness. While the first price of concrete is generally somewhat less than timber, it ultimately amounts to from 25 to 45 per cent. more because of the time necessary for placing.

Concrete Not Always Advisable.

Concrete is not advisable for large shafts, because it has to withstand hydrostatic pressure, which is not the case with the timber. The concrete should keep out the water completely, because "weepholes" are not desirable. It should be remembered here that as yet experience regarding concrete as a lining is limited. In the lead-mining districts of Spain, where I have sunk many rectangular shafts, the methods were as follows: Where masonry is applied, the rock is cut away 0.6 m. outside the permanent size. At a suitable point four stone arches, constituting a set, are put in and the walling is built up on them. For the short arches, hitches are hewn out of the rock. It is always advisable to place these sets of arches from 10 to 15m. apart, because of the lateral pressure. In a circular shaft, one supporting wall is sufficient for more than 50m. of masonry. There is no danger from lateral pressure, because it is the same all around the lining. As a rule, only the upper part of the shaft is walled; the rest is fortified with timber, the frames being placed from 1 to 1½ m. apart. For this an extra 0.25 m. is given, reducing thereby the excavation. Masonry is usually more expensive than timbering and certainly is slower to construct, but a shaft once properly walled needs no repair. This cannot be said for timbering, however, especially in upcast shafts.

Cost of Retimbering.

Retimbering of a shaft is often of more consequence than it appears at first sight. It is not only the cost of the new timber that must be taken into consideration, but also the taking out of the old material, which may be dangerous work and is apt to impede the regular traffic through the shaft, thus affecting the output of the mine. To what magnitude such an operation may eventually grow will be seen from the following details of Nos. 1 and 1 shafts of the Vereinsglück colliery. These pits had been sunk to 636 m. depth. They were rectangular in shape and timbered with frames 1 m. apart from 20 m. downward. No. 1 shaft took eight years to repair, and when No. 2 shaft was being overhauled, the remaining timber collapsed and the pit was blocked to within 260 m. of surface. The repairs of No. 2 pit lasted three years and three months, and cost over $50,000. Mine owners who project only one hauling shaft should well consider the advisability of timbering. I agree that all mines should have two connections with surface, but it appears to me that mining companies are far too generous as regards shafts. For a mine say, with 200 tons crude ore output per 24 hours, one hauling shaft should be sufficient. In this shaft should be placed also the pump and ventilating pipes, ladderway, etc. Another small shaft connecting the permanent mine working with surface, would insure ventilation and a second outlet for the men. In a mine of this sort, it would not be advisable to have a timbered shaft, because any large repairs would probably cut down the output.

Shaft Linings.

Some shafts which I have sunk in Spain have needed no lining at all, but even then it was tedious work breaking out the corners; however, the shape given permitted of an easy division of the compartment. It consisted in some cases of simply two-cage compartments and a ladderway, the guides being fixed to the dividers. Under ordinary circumstances, the lining of circular shafts is simple. It consists, except where masonry is used, of U-shaped steel or iron rings placed at from 1 to 1½ m. apart, and held together by upright hooks. Boards are placed behind the rings and are held fast by wedges. The dividing pieces to hold the guides and ladderway are lashed to the rings. Each ring is made up of five segments. A good example of such work can be seen in the Kaiser Wilhelm II. shaft at Clausthal, which is now down about 3,000ft. The iron work weighed 1,225 kg. for each meter of shaft and cost £15. During a period of 24hr., 8 m. of shaft were lined, including the placing of boarding and cross pieces. A German expert has said that under similar conditions the speed of sinking a rectangular shaft would be much less. It is interesting to note that the lining described above is practically the same as that used for the provisional lining in the large colleries and salt mines on the Continent. I say "provisional" because walling or tubbing is always used when any fortifications are necessary.

Advantages of Rectangular Shafts.

The advantages of a rectangular shaft are really few. Timbering is not practical in a circular form. Where timber is cheap and plentiful, and iron difficult to obtain, there can hardly be a question as to the shape of a shaft. The rectangular form adapts itself to the cage without loss of area. In circular shafts there is a loss of space between the squares formed by the cages and the circumference. In present practice, however, this space may be considered a necessary item as a means of conveying power cables and pump mains from underground to surface. This space is also used sometimes for ventilation.

---

* From the *Engineering and Mining Journal.*

CIRCULAR FORM CHEAPER AND SAFER.

The advantages of the circular form are many and important. It is safer because of the pressure being equal in all directions. The lining can be considered a permanent one and cheaper in the long run and often in first cost, than timber. If boards are used behind the steel rings of the lining, they can easily be changed from time to time at little trouble and cost. Masonry is cheaper and easier because there is not the need of the repetition of hitches and arches. Less thickness of masonry gives equal strength. The speed of sinking is faster. The modern methods used in shaft operations to combat underground water and quicksand, such as the Kind-Chaudron and the Pötsch, with the aid of iron tubing are all applied to the circular form of shaft.

SINKING RECORDS COMPARED.

Let us imagine that two shafts, one circular and one rectangular, are to be sunk to a depth of 200 m. in the rock that ore miners most commonly encounter, schist, and that the ground not being safe, lining is necessary. We will also assume that the district is in some not too remote part of Europe within measureable distance of a railway or shipping port. The inflow of water may be ignored because in this case it would make equal difficulties for both shafts. In these days of electrical pumps a large shaft can be avoided, and as the mine is not to be a large one, the dimensions given below will suffice.

DIMENSIONS OF CIRCULAR AND RECTANGULAR SHAFTS.

Shape	Dimensions Inside, Meters	Area Finished Shaft Meters	Area Temporary Shaft. Meters
Circular	3.00	7.06	12.57
Rectangular	4x1.70	6.80	15.08

It has been decided to use walling to 100 m. depth. The masonry of the circular pit is 0.50 of a meter thick and that of the rectangular 0.60 m. The area of the latter shaft being larger than the former, more rock must be broken and extracted. Because of this and having to cut out the corners, the speed of sinking is considerably slower. At each meter, provisional pine sets with boards behind are put in place in the rectangular shaft. At 50 m. depth, hitches are hewn out of the solid rock, and a set of arches erected, upon which the masonry is built up. Arches are put in 10 m. apart because of the vertical and lateral pressure. Close repetition is necessary, as otherwise the masonry would be likely to bulge in.

YESSENITZ SHAFT. NORTH GERMANY.

Many such examples could be given, the most notable of which is the Yessenitz shaft in North Germany. It took 21 years to sink. The operations were continued with unprecedented perseverance against an accumulation of difficulties of every description. The Pötsch system of freezing the quicksand into solid blocks of ice was successfully carried out to a depth of 75 m. From 75 to 130 m. the shaft was sunk by hand, but on account of the enormous quantity of water, the freezing system and great pumping installations failed to attain a depth of 150 m. Ten years passed in this way. Ultimately, the shaft was successfully bored by the Kind-Chaudron method. A number of shafts have been treated similarly when every other way has failed or left no prospect of success. In shaft sinking, where large quantities of water are expected, it is well to consider that eventually boring may become necessary and to arrange the shaft and operations favourably for this. To return to the question at the beginning of this article, "Why certain districts characterised by similar conditions adhere so strongly to one particular type of shaft." I think I am justified in answering that it is a matter of custom. With all due respect to metal miners, I think more knowledge of circular shaft sinking would result in a benefit to shareholders in many mining concerns.

Reported Oil Discovery.

What bids fair to develop into a very valuable oil field is now being placed before the general public for their support. The locality of the find is in Griqualand East, at a distance of about 25 miles north-east of Barkly East, and 70 miles from the railway line at Lady Grey, at Mosheshsford, near the border of Basutoland and at the junction of the Kraai and Bell Rivers. Considerable correspondence has taken place during the past 15 months with regard to this discovery, says the *E. P. Herald*. The greasy matter called locally "vasoline" has been analysed by the Colonial Government analyst and others with the result that it contains 80 per cent. of pure paraffine, and the remaining 20 per cent. a kind of spindle oil, and it is free from spirit or benzine. Naturally the discovery aroused suspicion, as such a find is unique in the annals of oil discoveries. It may possibly be known that from crude petroleum the oil of commerce is distilled after passing through a variety of processes, and the only explanation that at present presents itself is that in nature's laboratory this distillation has been carried on and the resulting oil forced to the surface through the porous limestone rock from which it comes when cut through. The oil has been examined and reported on, but as practical investigation is more reliable than theory, it was arranged that the experienced driller that the Algoa Mining Company imported from the Austrian oil fields three years ago should personally inspect and report on the proposition. In October last he accompanied the secretary of the company and spent some days in examining the locality, and found all that had been said about it corroborated by fact, but to make sure that there could be no doubt in the matter he drilled three holes in the black ground some little way down the shaft, and on each occasion the oil came out. The *Herald* considers that there is every evidence so far as can be judged of a considerable oil field being present.

Henry R. Merton & Co.,
LIMITED,
2, Metal Exchange Buildings,
Leadenhall Avenue, London, E.C., ENGLAND.
Cable Address: "MERTON," London.

BUYERS of all Classes of Minerals, Ores of Copper, Tin, Silver, Lead, Zinc, Antimony, Wolfram, Concentrates, Bullion, etc.

South African Representatives—
Messrs. PARRY LEON & Co.,
Mercantile Buildings,
P.O. Box 1101,
Simmonds Street, JOHANNESBURG.

MINING MEN AND MATTERS.

Mr. Raymond Schumacher will sail for South Africa on the 3rd of February.

* * * *

Mr. W. W. Mein has become consulting engineer to the Dome Mines at Porcupine.

* * * *

Mr. E. Langley, Inspector of Mines, Germiston district, has been appointed Inspector of Mines, Kimberley district. He is succeeded by Mr. C. E. Hutton.

* * * *

Mr. H. C. Sims, Assistant Inspector of Machinery under the Mines Department, leaves Krugersdorp at the end of the month for Bloemfontein, where he will assume duty as Inspector of Machinery, Orange Free State.

* * * *

The local Council members of the South African Association for the Advancement of Science have arranged an "at home" on Wednesday, the 31st inst., to meet Sir Almroth Wright, M.D. The function will be held at the South African School of Mines, Eloff Street, at 8.15 p.m. Music and refreshments will be provided. Tickets can be had from the hon. secretary, Mr. R. T. A. Innes, the Observatory, or from Mr. E. A. E. Collins, c/o Messrs. List Bros., 66 Pritchard Street.

Tell advertisers you saw their advertisement in the *South African Mining Journal*.

E. J. MOYNIHAN,
CONSULTING ENGINEER.
PLANS, SPECIFICATIONS, REPORTS AND ADVICE, MINING EQUIPMENT, STRUCTURAL WORK AND FINANCIAL ADVICE.
10, ANGLO-AUSTRIAN BUILDINGS. Box 2061.

THE WEEK IN THE SHAREMARKET.

A Slight Improvement—Some Noteworthy Fluctuations—Still Quiet.

The week has been chiefly remarkable for fluctuations in several stocks, notably Wit. Deeps, Rooibergs and Zaaiplaats. Tin shares have suffered more than others, though the reports from the mines are still most favourable. Wit. Deeps were sold on absurd "bear" rumours, which were promptly checked by the issue of a reassuring official statement. The Randfontein and Langlaagte meetings passed off successfully, the directors having issued circulars giving a *précis* of the annual report some weeks ago in London. Diamond stocks are little dealt in here, so that the improved market for them has had no effect with us. The labour position is strengthening daily, and in a little while should be satisfactory, though by June it may become bad again. News from the mines is better generally, and there is reason to hope that the next few months will infuse a larger measure of confidence.

	*	*	*	*		
	Friday, 19th.	Sat., 20th.	Monday, 22nd.	Tuesday, 23rd.	Wed., 24th.	Thurs. 25th.
African Farms ...	16 0B	16 3B	16 0B	16 3B	16 3	16 3
Aurora West ...	...	7 6s	...	...	..	7 6B
Adair-Usher Process	1 6B	1 6B	...	...	1 6B	...
African-European In.	...	...	...	10 6s	...	...
Apex Mines ...	...	...	...	...	...	33 0B
Bantjes Consolidated	23 9B	23 9B	24 0	..	23 0B	23 6B
Benonis	9 9	10 6	10 9	10 3	10 3	10 0B
Blaauwbosch ...	18 0B	18 0B	...	...	15 0B	16 0
Bushveld Tins ...	0 9B	0 9B	0 11	0 10	0 9	0 9
Brakpan Mines ...	50 6B	.	...	48 9B	...	...
British S.A. ...	...	...	...	27 6B	...	-
City and Suburban ...	47 0	47 3B	47 6B	48 3	49 0	48 9
City Deeps	51 3B	50 9B	50 0B	51 0B	50 3B	50 9
Cloverfield Mines ..	3 9B	3 9B	4 0	4 0s	4 6B	3 11
Cons. Langlaagtes ...	17 6B	18 0	18 0s	19 0B	18 6	18 9
Cons. Main Reefs ...	15 6B	15 6B	15 6B	15 6s	15 6s	15 9B
Crown Mines ...	...	...	..	123 0	...	...
East Rand Cent. ...	...	7 9B	7 9B	8 0s	8 0s	7 6B
East Rand Coals ...	2 6B	2 6B	...	2 4B	2 5	2 6
East Rand Deeps ..	2 3s	..	...	2 6s	2 6s	...
East Rand Props. ..	65 6B	62 0s	63 6B	...	67 0s	...
East Rand Deb. ...	£96B	£96B	£96B	£96B	£97B	£96½B
Eastern Gold Mines	1 11s	1 9	1 10B	1 11	1 9B	1 10B
Govt. Areas... ...	21 9	21 6B	21 0B	21 0B	21 0B	21 0
Glencoe (Natal) Colls.	...	5 9B	5 9B	5 9B	..	...
Glynn's Lydenburgs	...	37 6s	...	37 6s	37 6s	38 0s
Ginsbergs	29 0B	29 0B	...	31 0s	...	30 0s
Geldenhuis Deeps ...	40 0B	40 0B	40 0B	40 0B	..	40 0B
Glencairns	4 0B	4 0B	4 0B	..	..	4 0B
General Minings ...	...	-	21 0B	...	22 0s	...
Jumpers	13 0B	..	...	...	16 0s	16 0s
Jupiters	8 3B	8 3	...	..	8 6s	...
Kaalfontein Diamonds	...	0 6B	0 6B	0 6B	0 7B	0 7B
Klerksdorp Props. ...	3 3B	3 2s	3 3B	3 3B	3 0B	3 0B
Knight Centrals ...	15 3	15 0B	15 0B	14 9	14 9B	14 9B
Lace Props.	3 0s	...	2 9B	2 10B	...	2 9B
Lydenburg Gold Farm	8 4B	8 3	8 3B	8 3B	8 1B	8 3
Main Reef Wests ...	25 3B	25 0B	25 0B	25 0B	25 0s	25 6
Modder B's	52 6B	53 0B	52 6B	52 3B	52 0B	53 0s
Midas Deeps ...	1 2	1 2B	1 3	1 2	1 1s	1 1s
Middelvlei Estates...	2 0B	1 6B	1 6B	...	1 6B	1 7B
New Eras	5 6s	5 6s	5 1B	5 9	5 8B	5 9B
New Kleinfonteins ..	27 6B	27 9B	27 6B	28 3	27 9B	28 0B
New Rietfonteins ...	11 6B	11 9B	11 3B	11 6	11 0B	11 3B
New Heriots ..	...	93 0s	96 0s	96 0s	96 0s	96 0s
New Unifieda ...	19 6s	19 6s	19 6s	19 6s	19 0s	19 9s
New Boksburgs ...	2 0s	1 0B	2 0s	2 0s	2 0s	2 0s
Nigels	20 0	...	21 0B	21 6	...	...
New Primrose ...	40 0B	...	...	...	...	41 6s
Orange Diamonds ..	1 10	1 9B	1 9	1 9	1 10s	1 7
Pretoria Cement Co.	55 0B	54 0B	54 0B	54 6	55 0B	55 6s

B Buyers. s Sellers.

	Friday, 19th.	Sat., 20th	Monday, 22nd.	Tuesday, 23rd.	Wed., 24th.	Thurs. 25th
Premiers Preferred	165 0B	..	...	171 3s	..	170 0B
Rand Nucleus ..	...	3 6s	3 0s	..	3 6s	...
Randfontein Estates	32 9	32 6B	32 9	32 6	32 0B	32 6
Robinson Deeps ...	...	...	...	...	...	...
Rooiberg Minerals ..	...	25 6B	25 6B	25 3B	23 6B	23 3
Rand Klip	4 3s	3 6B	3 9B	3 11	3 10B	3 10B
Roberts Victors ...	20 0B	..	23 0B	21 0s	...	20 9s
Rood. U.M.R. ...	24 0s	...	24 0s	...	...	...
Rood. Durban Deeps	27 6B	...	...	...	...	...
Randfontein Deeps ..	...	4 9s	...	...	4 6s	...
Ryan Nigels ..	...	3 6B	...	4 0	...	...
Rand Collieries ..	...	9 0s	7 6B	...	7 0s	...
Simmer Deeps ...	...	3 6	3 6B	3 9B	4 0B	4 0B
South African Lands	4 2	4 0B	4 0B	4 0	4 0B	4 1
S. Randfontein Deeps	2 6B	2 6B	2 6B	2 3B	2 5B	2 6
Sub Nigels	...	...	6 6B	...	...	...
S. A. Breweries ...	40 0s	40 0s	40 0s	40 0s	40 0s	...
Springs Mines ...	8 0B	8 6	7 9B	8 3s	5 0B	8 0s
Swaziland Tins	32 6B	32 6B	32 6B	...	32 6B	...
Simmer Easts ...	0 3s	0 3s	0 3s	0 3s	...	0 3s
S.A. Tin Mines ..	...	...	...	...	6 0s	...
Trans. G.M. Estates	..	...	...	46 6	...	46 0B
Temple Tins	2 9B	2 9B	...	...	2 9B	3 0B
Trans. Coal Trusts...	33 0B	..	32 6s	32 9	32 0B	...
Van Ryn Deeps ...	8 1	8 0	7 10B	7 9B	7 9B	7 9B
Village Deeps ...	42 0B	41 9s	42 0B	42 0B	42 0	..
Vogel. Cons. Deeps...	1 6B	1 0s	...	...	2 0s	...
Voorspoed Diamonds	...	...	15 0B	...	...	...
Witbank Collieries ..	41 3s	42 0B	42 0B	...	43 6s	...
Wolhuters	22 9B	22 9	22 6s	22 6B	22 9s	22 9B
Wit. Deeps	52 6B	53 6B	49 0B	46 6	47 0	49 6
West Rand Con. ...	10 0B	10 0B	10 5s	...	10 0B	...
Zaaiplaats ..	75 9	71 0	73 6B	72 6	72 0	72 6B

B Buyers. s Sellers.

INVESTORS' DIARY.

The following company meetings have been announced :—

Feb. 20.—Premier (Transvaal) Diamond Mining Co.
Feb. 28.—East Rand Prop. Mines
Feb. 29.—Worcester Exploration Co. (Worcester C.P.).
March 6.—Crown Mines.
March 7.—Rose Deep.
March 8.—National Bank (Pretoria); Geldenhuis Deep; Wit Deep; Cloverfield Mines.
March 12.—Durban Rood. Deep.
March 13.—Robinson G.M.
March 14.—Bantjes Con. Mines.
March 15.—Village Deep.
March 20.—City Deep; Lancaster West; May Consolidated.
March 21.—Ferreira G.M.
March 22.—Modder "B": Vogel Cons. Deep; Knight Central.
March 26.—Cassel Coal Co.
March 27.—Rand Mines; Modder Deep Levels; Princess Estate; Geduld Prop.
March 29.—Simmer Deep; Jupiter.
April 12.—Transvaal Consolidated Lands.

Bucks Reef.

The following are particulars of last month's working results at the Bucks Reef mine, viz.: Tons crushed, 530; yield, £1,086 5s. 9d.; loss, £874 14s. 8d.

Cape Tin.

Development work is still proceeding on the property of the Vrede Hoek Syndicate, and upwards of 130 men are now employed, including artisans. The 10-stamp battery—to be driven by a gas suction plant—is on the point of completion, and it is possible that stamps will be dropped this week.

The Sandycroft Foundry Co.,

LIMITED,

INCORPORATED IN ENGLAND.

Tel. Add.: "Sancroft."
Telephone No. 360.

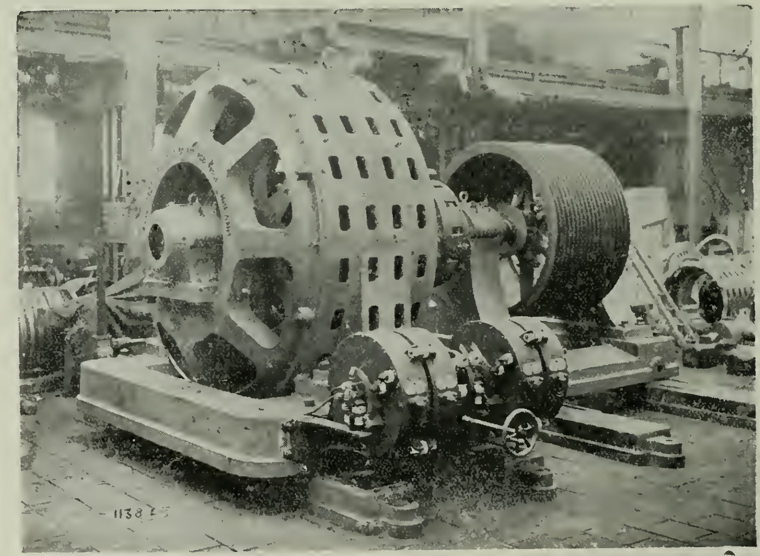
JOHANNESBURG.

P.O. Box 1976.
Offices: Corner House.

MAKERS OF

Electrical and Mechanical Machinery.

"CASCADE" INDUCTION MOTORS.



500 h.p., 2080 Volt, Single Speed Compressor Motor.

Single and Two-Speed "Cascade" Motors

High Starting Torque, Efficiency, and Power Factor at Both Speeds.

Agents for Suckling Water Tube Boilers,

Messrs. Yates & Thom, Messrs. Crossley Bros.,

Etc.

Engineering Notes and News.

Iron v. Lead Pipes.

In a report to the Kingwilliamstown Town Council, Mr. Caink, the Borough Engineer, says:—"From a water supply point of view, one of the most serious objections to iron pipes as compared with lead is the difficulty in detecting waste of water when they start leaking: if a lead pipe is so worn that it will no longer withstand the pressure, it usually bursts and rips open, causing a considerable flow of water, which is quickly detected and the waste stopped; but with iron pipes they usually get eaten first into a series of small holes not much larger than a pin's head, and then gradually larger and larger, and, although there may be a large number of these throughout the whole length of pipe, the water leaking out is sucked up by the earth, and for a considerable time does not show itself at the surface excepting perhaps by a slight dampness of the ground; hence, if large numbers of iron pipes were put down in Kingwilliamstown, in a comparatively short time after they had corroded we should get a large number of small leaks, which would be very difficult to detect, but be a very serious matter during times of heavy consumption." Mr. Caink has been given discretion to employ the piping he thinks best.

Annual Meeting of the S.A. Institute of Electrical Engineers.

The second annual general meeting of the South African Institute of Electrical Engineers was held in the Lecture Theatre, School of Mines, on January 18. Mr. J. H. Rider presided, and there was a specially good attendance of members. The annual report of the Council, which was read by the secretary (Mr. Fred. Rowland), showed that the membership had increased slowly but satisfactorily. The Council had hoped to have doubled the membership reported the previous year, especially having in view the fact that there were so many men connected with the profession resident along the Reef and elsewhere in South Africa who had not thrown in their lot with the Institute. They hoped that the ensuing year would emphasise the fact enunciated by Mr. Drummond Chaplin at the annual dinner that the Institute had a great future, because it lay with it to educate the general public in the technical details of electricity and electrical science, and to act as pioneers in spreading electrical science all over South Africa. If every member would induce one friend to join the Institute, the membership would be doubled. During the year there had been elected and admitted eight members, thirty-two associate members, sixteen associates, and sixteen students, or a total of seventy-two. From this number certain losses had to be deducted, leaving a total net increase of sixty-five, which with the 205 reported at the previous annual meeting, made the membership 270. During the year excellent papers had been read, and the discussions had increased in keenness and in interest. But the Council pointed out that more papers were required, and that fuller discussions were needed to enable the objects of the Institute to be fully fulfilled. It was intended to print papers in the "Transactions" of the Institute, and to circulate them amongst the members before the meeting at which they were to be read. The attendance at the meetings during the year had averaged seventy-five per meeting. A students' section was inaugurated during the year, which promised to be of increasing usefulness. Mr. W. H. Perrow was awarded the

"SISKOL"
STOPE-DRILLS.
HAMMER-DRILLS.
COAL-CUTTERS.
AIR-COMPRESSORS.

We are always willing to Send Our DRILLS Out on Trial.

THIS SPEAKS FOR ITSELF.

WRITE OR PHONE US.

International Channelling Machines, Ltd.,
(INCORPORATED IN ENGLAND.)
2 & 3, TRUST BUILDINGS, JOHANNESBURG.
Phone 2643. Telegrams "SISKOL." P.O. Box 1382.

gold medal of the Institute for the best paper read during 1910, and the medal was presented to him by Sir Lionel Phillips, whom the Institute congratulated upon the well-earned honours recently conferred upon him by His Majesty the King. The prizes offered by the Institute to the School of Mines for the best results obtained at the recent evening classes' examinations had been awarded as follows:—Electro-technics, Stage 1, one guinea, Mr. John Gardner; Stage 2, two guineas, Mr. R. O'Kell. Electricity and magnetism, 1½ guineas, Mr. A. A. Rae. A sum of £15 had been voted to the Seymour Memorial Library, and Professor Buchanan represented the Institute on the Library Committee. Mr. Bernard Price was appointed to represent the Institute on the executive of the South African Engineering Standards Committee, and Professor Buchanan was the delegate of the Institute to the General Committee established by the Royal Society of South Africa and the South African Association for the Advancement of Science, to administer certain funds for the furtherance of scientific investigation. In conclusion, the Council expressed appreciation of the help rendered by the School of Mines in allowing the Institute to hold its meetings in its Lecture Theatre, to the Press for the publicity given to the proceedings of the Institute, and to the secretary (Mr. Fred. Rowland). The report and accounts were unanimously adopted. Mr. J. H. Rider was unanimously re-elected President for the ensuing year. The other officers elected were: Vice-Presidents, Mr. Bernard Price and Mr. W. Elsdon-Dew; Members of Council (a) Members, Messrs. W. H. Perrow, J. W. Kirkland, A. G. F. Heather, Prof. W. Buchanan, L. B. Woodworth, A. E. Gibbs, R. Curtis, G. A. Webb, and T. H. Watson; (b) Associate Members, Messrs. J. S. Ross, G. H. B. Bernard, and E. V. Perrow. Mr. J. H. Rider then gave an illustrated lecture on "The Electrical System of the London County Council Tramways," and the meeting closed with a vote of thanks to the chairman for his lecture.

Mr. Hugo Evennett, long and favourably known on the Rand as manager for Messrs. Whitelaw & Son, timber and mining material merchants. Johannesburg, left for Europe this week on a business visit. Mr. Evennett expects to return to this country in about three or four months' time, and an opportunity will thus be afforded to Home manufacturers, who may wish to be represented here, to get into personal communication with an able business man who may be of service to them. During his stay in Europe Mr. Evennett's address will be c/o our London offices, and on his return, P.O. Box 1895, Johannesburg.

WANTED

OIL ENGINE, 20 H.P. Guaranteed working order.

Particulars to

BOX 1227, JOHANNESBURG.

WANTED.

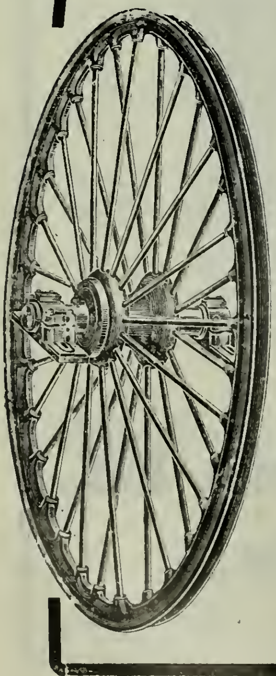
First-class man to take charge of Cyanide and Assay work for five-stamps proposition up-country. Starting salary £30 per month. Apply with copies of testimonials to CYANIDE, c/o South African Mining Journal, P.O. Box 963, Johannesburg.

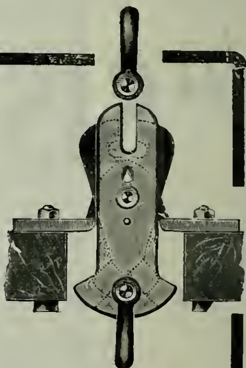
THE STOBIE PATENT RESPIRATOR

Only weighs half an ounce. Cheapest, most effective and comfortable in the market.

Order wholesale from Stobie Company (Ltd.), Box 2321, Johannesburg, or retail locally through your chemist.

Miners' Phthisis prevented by the use of Stobie Respirator.





Latest Improvements in

Headgear Sheaves

Haulage & Brake Pulleys

Up to 25 feet in Diameter.

Mild Steel Built up Sheaves

Specially suited for deep Mining, any Section or Load.

Safety Detaching Hooks *A Speciality*

Full particulars from: **THOMPSON & SOUTHWICK, LD.**

(Export Dept.) ENGINEERS,

Cables: "PULLEYS." **TAMWORTH, England.**

Commerce and Industries.

A Soap Magnate.

Sir William Lever, head of the great soapmaking firm, visited the Rand this week, where the firm has established a local factory. At Durban another and a larger soapmaking works belonging to the same company is in operation, and it would be well for South Africa if more British industrialists were similarly to take root here.

* * * *

Bacon Curing in Rhodesia.

Much attention has recently been directed to the development of bacon curing and animal industries in Rhodesia, and the British South Africa Company has lost no time in meeting the wishes of the farmers of the country that the industry of bacon curing should be started at once. Other developments, such as the establishment of butter factories and abattoirs, can follow on. As a consequence, it has been decided to construct a bacon factory with a capacity of about 500 pigs per week, at Bulawayo. The specifications and plans are being prepared by Mr. Loudon M. Douglas, F.R.S.E., technical adviser to the British South Africa Company, and particulars of these may be obtained on application to the Commercial Agent, Bulawayo, Rhodesia. Other bacon factories are likely to follow. It will be remembered that Mr. Loudon M. Douglas carried out a most successful propaganda in Rhodesia during last year, in connection with swine husbandry and the establishment of animal industries, and he will continue the good work thus begun during the present year, and will make Bulawayo his headquarters.

* * * *

S.A. Building Society.

Presiding at the annual meeting of the South African Building Society (Permanent), this week, Mr. Watkins, M.L.A., emphasised that the Society was in an extremely sound position. The reserve fund had increased by £900, notwithstanding the depreciation written off Consols. The reserve fund now stood at £17,000, and was quite healthy, and each year they were adding to it. They had settled down to a steady seven per cent. dividend. With reference to Johannesburg, the chairman said that although the rate of interest on loans continued, the lower profit returned by that branch was satisfactory and was equal to that of the last few years. Pretoria was proving a steady outlet for the Society's enterprise, good business having been done. He referred to the recovery of the amount of share capital and the continued improvement in savings bank business, while a healthy sign was the improvement in loan business. The share capital of the Society amounted to £189,722 this year, as against £180,000 last year; savings bank, £168,000; and loans, £249,000, against £209,000.

* * * *

Patents in 1911.

It is curious that although in the year just completed there have been fewer applicants for patents, the number of women inventors has increased, possibly, it is suggested, owing to the interest which ladies now take in the affairs of the country. Messrs. Stanley Popplewell & Co., patent agents, of 38 Chancery Line, London, state that the total number of applications was 29,400, a decrease of 968, compared with the number filed in 1910, which itself was lower than the aggregate for 1909. It is somewhat difficult to explain the precise reason for this falling-off. The Patent Act of Mr. Lloyd George, with its stringent requirements as to the actual working of the patented invention in England, seems no longer to have a deterrent effect on foreign inventors. The re-enacted provisions of the precious Act, however, which have been in force for eight years, are still effective in checking the issue of invalid patents or limiting very materially the scope of those patents which are granted eventually. Undoubtedly the largest class of patent applications relates to motor-cars. Petrol engines also account for a large number; and there is a growing endeavour to supplant the poppet type of valve. Many of these engines are, of course, particularly designed for aeroplanes. The latter themselves are not the subjects of so many patents as would be supposed. It seems that the unrest in the labour world has not yet led to a boom in labour-saving inventions, though this may occur soon. Perhaps it is not generally known that there is quite a demand for this class of invention in New Zealand and Australia, where little difficulty is experienced in finding capital for their exploitation.

* * * *

Cape Slaughter-Houses.

Another stage in the advance towards the unification of the Cape Peninsula has been achieved in the decision to establish public slaughter-houses under joint municipal control. For the past fifteen a months a joint committee, representative of the Cape Town, Woodstock, Mowbray, Claremont, and Maitland Councils has been considering the subject, and an extensive site, ideally situated for the purpose, has been acquired at Nieuwe Molen. Architects of South Africa have been invited to submit designs for a comprehensive scheme to cost £20,000, premiums of £100, £50, and £25 being offered for the three selected designs placed in order of merit by the joint assessors. Messrs. Arthur H. Reid, F.R.I.B.A., President of the Institute of South African Architects, and R. W. Menmuir, A.M.Inst.C.E., who have been appointed to report upon the merits of the schemes submitted. The last day for the submission of designs is noon, Wednesday, January 31.

* * * *

White Labour.

The report of the Inspector of White Labour, Transvaal, states:—Applications for employment at the Johannesburg Bureau during December were 284; for November, 367; decrease, 83. Employment found during December, 84; for November, 78; increase, 6. Demand for December, 103; for November, 96; increase, 7. Plans approved by eight municipalities have an estimated value of £216,876 for December, against £245,826 for November, a decrease of £28,950. Tenders accepted by Government for public buildings during the month, and not included in the above, amount to £42,059 14s. 1d.

* * * *

Natal Bank, Ltd.

Application will be made by the Natal Bank, Ltd., during the ensuing session of Parliament for leave to introduce a Private Bill, entitled "Private Bill to repeal and re-enact, with amendments, the Private Law of the Province of Natal, dated the 3rd day of August, 1866, relating to the Natal Bank, now incorporated under the name of the Natal Bank (Limited)." In addition to the objects shortly disclosed in the title of the Bill, the general objects of the Bill are: (1) To empower the directors and shareholders of the Natal Bank, Ltd., from time to time and at any time, to arrange with any person or company or with the directors of any company or companies, bank or banks, for an amalgamation of the Natal Bank, Ltd., with, or the disposal of the Natal Bank, Ltd., or any branch thereof to such person, company or companies, bank or banks, and for the carrying on of the business under the charter of incorporation of such company or companies, bank or banks, or under the Natal Bank (Limited) Laws, 1888 to 1909, and/or under any further and/or other Act or Acts and/or under articles of association and/or other the acts of incorporation of such other company or companies, bank or banks, or otherwise, as shall or may be determined upon by the directors of the Natal Bank (Limited), and any person or company or companies, bank or banks, or the directors of any such company or companies, bank or banks.

Our Twenty-First Birthday.

Unique Advertising Opportunities.

This year the "SOUTH AFRICAN MINING JOURNAL" celebrates its Twenty-First Birthday.

To mark the occasion a SPECIAL ANNIVERSARY ISSUE which will deal with every conceivable aspect of Mining, Metallurgy, Finance, Engineering, Railways, Harbours and Subsidiary Industries throughout the Sub-continent, will be issued in May next.

The Leading Mining and Financial Men of Europe, Africa and America will contribute to this Special Number, which will Establish a RECORD in South African Illustrated Journalism.

WORLD-WIDE CIRCULATION IS ASSURED.

Do You Wish to Push Your Business?

Apply at once for Advertisement Rates to the

Manager, "S.A. Mining Journal,"

Box 418. **Telephone 913.**

119-126, Exploration Buildings, Johannesburg.

THE ADVERTISING SPACE IS LIMITED AND EARLY APPLICATION IS ESSENTIAL.

Dairying in the Free State. In the monthly report for October of the Superintendent of Dairying the following gratifying comments appear with reference to dairying in the Free State:—"In the Free State there is a very great demand for the services of the Dairy Instructor which is noted with great satisfaction. The season promises to be very fine indeed. For the month under review it is estimated that the increase in supplies of cream to the seven established creameries in that Province will amount to something like 20,000 lb. over the corresponding period of last year. The prospects indicate a record year. Keen interest is manifested in all parts by the farmers, who are adopting the most up-to-date methods, and they are procuring first-class dairy stock. Instruction and advice are sought and readily accepted."

* * * *

Dips and Dipping Tanks. Applications to the Agricultural Department for loans for the purpose of erecting dipping tanks continue to pour in from all quarters. The Veterinary Division is almost daily receiving encouraging reports of the benefits which are being derived from their use. In one or two instances, however, accidents have happened by reason of lack of proper care in the preparation of the dip, and for that reason opportunity is taken to point out to all those who intend dipping their cattle that, although arsenical dips can be used safely and without risk if the instructions for preparing and using them are carried out, the chief ingredient of the dip, arsenite of soda, is a powerful poison and in making a dip ready for use every care should be taken to see that the various ingredients are weighed and measured and the proper amount of water is added. On no account should farmers attempt to guess the quantity of arsenite of soda which is being added to an uncertain quantity of water, as such methods are likely to lead to trouble. The East Coast fever pamphlet mentioned by Government Veterinary Surgeon Dixon, which contains full instructions for the preparation of cattle dips, will be sent post free to any applying for it.

* * * *

Government Guano. With a view to assisting farmers in procuring Government guano, arrangements have been made with the Railway Department whereby supplies of this product may be obtained direct from Capetown through the medium of local stationmasters. Applications for guano, accompanied by payments in advance, may therefore now be placed with any stationmaster within the Union of South Africa. The price of guano is £5 per ton of 2,000 lb., or 10s. per bag of 200 lb., including bags, delivered to the Capetown railway station. All railage charges are payable by the consignee, and in case of guano consigned to sidings these charges must be prepaid.

* * * *

Successful Markets. Port Elizabeth's municipal markets for the sale of produce continue to rank as among the most important in the Union. During the year just ended close on two and a half millions sterling passed through the various branches, and in all, save one, most substantial increases were shown, the total advance on the preceding year being over £232,000. Altogether the total amount realised on the markets was £2,403,637 1s. 5d., against £2,171,252 19s. 7d. in 1910, the total increase being £232,304 1s. 10d. In the wool sales a total of £146,710 14s. 2d. was dealt with, as compared with £113,961 9s. 2d. in 1910, an increase of £32,749 5s. Ostrich feathers, too, beat previous records, the advance being £78,479 2s. 9d. In 1910 the sales reached £833,746 7s. 11d. Last year the aggregate was £901,225 10s. 8d. Mohair was sold to the value of £147,543 1s. 2d., against £148,394 9s. 11d. in 1910, an advance of £8,848. On the morning market there was a turnover of £122,742 14s. 11d., against £115,054 19s. 10d., an increase of £7,687 15s. 1d. The only branch in which a shortfall was shown in was in curios, where the receipts were £215 0s. 6d., against £385 12s. 9d. in 1910, a decrease of £170 12s. 3d.

Companies in Liquidation.

The Sterkspruit Gold Mining Co., Ltd.; a list of contributors will lie for inspection at the office of the R.M., Carolina, and Master's office, Pretoria, for 21 days from January 16th. S. J. van Wyk, liquidator.

Quince Syndicate, Ltd. (voluntary), January 4th; a meeting of creditors will be held at Room 40, Stock Exchange Buildings, Johannesburg, on January 19th. G. Astley, liquidator.

Outlook Gold Mining Syndicate, The; application will be made on January 25th, to decide the difference between the determinations of creditors and contributories.

Western Free State Diamond Syndicate, Ltd. (voluntary); a general meeting will be held at 12, Bethlehem Buildings, Simmonds Street, Johannesburg, on February 15th. Albert E. Jacobs, liquidator.

New Cape Companies Registered in December.

Aspelingdale Company, Limited.—Registered office, Uniondale, C.P. Directors: D. Jordaan, F. Uithalder, K. Petersen and nine others. Capital, £2,500. Registered December 7th, 1911.

Riversdale Hotels, Limited.—Registered office, Mossel Bay. Directors: M. Aronson, R. St. J. Green and S. Kanterowitz. Capital, £5,000. Registered December 12th, 1911.

United South Western Hotels, Limited.—Registered office, Mossel Bay. Directors: R. St. J. Green, S. Kanterowitz, and W. J. Laite. Capital, £20,000. Registered December 12th, 1911.

High Constantia Brandies, Limited.—Registered office, 165, Loop Street, Capetown. Directors: R. F. Bertram and F. S. Green. Capital, £100. Registered December 21st, 1911.

Cape Coalfields, Limited.—Registered office, Capetown. Directors: W. W. Bell, E. A. Graham, A. N. Payne, and W. Sullivan. Capital, £5,000. Registered December 22nd, 1911.

Rogaly & Company, Limited.—Registered office, Port Elizabeth. Directors: Henry Joseph Rogaly and Elgar Bellhouse Pagden. Capital, £2,000. Registered December 30th, 1911.

INCREASE OF CAPITAL.

Old Chums Diamond Co. (1911), Ltd., from £4,000 to £5,000, December 15th, 1911.

New Patents.

17. Thomas Kerr, and John Mitchell Neill.—Automatic regulator of outflows in classifiers and separators.
18. Thomas Graham Martin.—Improvements in or relating to apparatus for separating suspended solids from liquids or gases, mixed liquids from each other and gases from liquids.
19. Charles Seymour McFarlane.—Improved apparatus for the production of gas from hydrocarbon oils.
20. Wilfrid Cuthbert Hunt.—Improvements in and relating to means for operating tramway track joints from the vehicles.
21. Arthur William Carter.—Improvements relating to shop fronts.
22. William Alfred White and William Frederick Schmidt.—Improvements in tube mill linings.
23. Alexander Siewert.—Telescoping mast.
24. Eugen Ketterer.—Improvements in valve gear for pneumatic tools.
25. Herbert Brown.—Improvements in and relating to electric signalling on railways.
26. Robert Thomson.—Improvements in column and floor or beam connections.
27. Robert Thomson.—Improvements in piles, piers, wharves, and like structures.
28. Willibald Grun and Pokorn, and Wittekind Maschineban, A. G.—Improvements in the method of and devices for regulating rotary compressors.
29. David Milne and Thomas Fotheringham.—Improved truck (coco pan) bearing.
30. Edward Sydney Luard.—Improvements in steam super-heaters for locomotive marine and other boilers.
31. Thomas Dawson.—An improved post, and process for making same for use as a mine prop and for other purposes.
32. Alexander John Wright and William Wallace Niblol.—A new or improved electrical device for catching and destroying flies and other small insects.
33. Walter Mackesy.—Improvements in motor boxes of multiple stamp batteries.
34. S. Fisher.—Adjustable rock drill jets.
35. Charles Edward Stuart-McCann.—Improvements relating to the bell pulls or other signal transmitting devices of electrical signalling systems.
36. Charles Edward Stuart-McCann.—Improvements in and relating to the cable joint boxes of electrical signalling systems.
37. George Ridgway.—An improved filter for slimes pulp and the like.
38. James Alexander Leekie.—An improved brick press.
39. Jehu Berry.—Anti phthisis air-cutout device.
40. James Herbert Dinwoodie.—Improvements in respirators.
41. Lewis Christie.—Improved cattle guard.
42. Alfred Wright and Fenning Pratt Kidson.—Hammer with wedgeless, jarless and unbreakable handle.
43. Rowland Owen Pickin.—Improvements in dust allaying attachments for rock drills.

Johannesburg Motor Garages and Suppliers of Motor Cars, Accessories, etc.

JUST ARRIVED—1912 MODELS

PHŒNIX AND VULCAN CARS

Trial Runs Arranged. Full Particulars from

REED'S GARAGE

GOVERNMENT SQUARE, JOHANNESBURG.
Phone 1434. P.O. Box 2720.

If its COMFORT and RELIABILITY you want,
—RIDE A—

BAT
MOTOR CYCLE

3½ H.P. £65. 6 H.P. £78 10s.
8 H.P. £82

AGENTS FOR:
Indian-Scott, Bat, New Hudson, Moto-Reve, Hazel Motors.

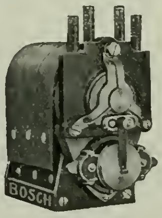
Send for FREE List

WILLIAMS, HUNT & CO.,
129, Commissioner Street, & Von Brandis Square.
Box 2437. 'Phone 3039.

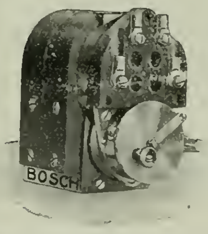
BOSCH MAGNETOS.

TRADE MARK.

A large assortment of the latest types of **magnetos** and **spares** of **all kinds, dual ignition coils** (vertical and horizontal), **sparking plugs,** and **White & Poppe carburettors** kept in stock.



Type D. R. 4.



Type D. F. 4.

Sole Representative for South Africa:

F. HOPPERT
CORNER OF
Main & Simmonds Streets,
JOHANNESBURG.

Teleg. Address: "MAGNETOS."
P.O. Box 3503.
Phone 3130.

Dunlop Repair Shop

SEND YOUR TYRES FOR REPAIR OR RETREADING
— TO THE —
MANUFACTURERS.

DUNLOP GROOVED TREADS (manufactured in our English Factory) Fitted to any make of cover.

Burst Covers and Tubes properly repaired.

Call and inspect samples of our work.

Dunlop Repair Works
83, BREE ST.,
P.O. Box 6370. JOHANNESBURG.
'Phone 831.

If you do your Own Repairs —
Send your difficult Machine Work to

PILLANS Bros. & OWEN
Mechanical & Electrical Engineers,
SAUER STREET, MARSHALL SQUARE,
JOHANNESBURG.

Cylinders and Crank Shafts Accurately Ground, and Bearings Remetaled. —

Accumulators Charged, Magnetos Fitted and Repaired. Tyres and Tubes Vulcanized.

MOTOR COVER AND TUBE REPAIRS AND RETREADING.

For Expert treatment by the oldest firm of Tyre Specialists in South Africa send your work to

Johannesburg Vulcanizing Works,
Cr. Loveday and Marshall Streets.
P.O. Box 3912. Telephone 2304. Tel. Add.: "RETREAD."

Automobile Notes.

Educating the Manufacturer.

Among the many South African representatives of British-manufactured cars, few perhaps can afford the time incidental to a visit to the seat of manufacture, where the requirements to meet Colonial conditions can be fully discussed, and brought convincingly to the notice of the various manufacturers. No amount of correspondence, it may be said, dealing with this important subject, however explicit, can effect this much desired end 7,000 miles distant from the home of the industry. Accepting this to be the case, it is gratifying to remark that makers themselves are inclined to take the initiative in these matters, and South African traders and motorists in general keenly anticipate the visit of Mr. S. F. Edge, a time-honoured name in the annals of motoring, who is about to thoroughly investigate the existing conditions, from the standpoint of automobiles in the sub-continent, which, needless to remark, differ so vastly from those obtaining in Europe, as to preclude all comparison. The visit of this expert may also be interpreted, in a sense, to creditably reflect the progress and prospects of the motor industry in South Africa, which has attained to such a pitch of development, as to warant extensive research as to its future possibilities, and probably no authority is better fitted to undertake the task of investigation than Mr. Edge, who will certainly share the knowledge acquired impartially on his return for the combined benefit of British manufacturers, and not simply confine his views exclusively in point of the betterment of his own particular car, the Napier, for use in the South African Colonies.

The Question of Reflex Lights.

In view of the ever increasing numbers of motor cars in Johannesburg the question of reflex lights for all vehicles calls for attention in the proper quarters. To the credit of the Municipality it must be said that most of the streets in Johannesburg proper are well-lighted, but unfortunately a reverse condition of affairs exists in several of the many suburbs, where cyclists and vehicles are often indistinguishable in the darkness to the motorist travelling in rear. The argument may be adduced that powerful lights should be carried on all motor cars, whereby the traffic on dimly or unlighted streets may be easily discerned, when the risks of accident would be reduced to a minimum. This is obviously a logical view of the situation which, however, hardly meets the case, as, in the first place it is a certainty that all motorists will not carry sufficiently powerful lights to ensure this result, and further were they compelled to fit lamps in the nature of miniature searchlights the dazzling brilliancy at times would prove a source of much inconvenience and possible danger to other road users, especially where horse-drawn traffic is concerned, as evidence the many bad accidents recorded owing to animals taking fright through the unaccustomed glare from the more powerful form of head-lights in use on motor cars. Reflex lights on vehicles are adopted largely in many places with very satisfactory results, and this simple provision, particularly in regard to slowly moving vehicles—the case of the cyclist is not so serious—amply justifies any pecuniary outlay, in the purpose which is served, and constitutes an inestimable boon where motorists are concerned. In Johannesburg the motorist is compelled by the by-laws to carry a rear light in order to indicate the number of his vehicle at night; in other parts the rule, however, does not apply, but seeing that the motor car is singularised from among all other conveyances in Johannesburg for the enforcement of this by-law, it may not be too much to expect that the great army of other wheeled vehicles now exempt in this respect should be called upon to conform to the regulation, in respect to reflex lights, governing motor cars.

The Mayoral Motor Car.

Some interesting figures anent the upkeep of the Mayoral motor car have been supplied to the public, which have set the man in the street, with no pretensions to knowledge of things automobile, thinking. How the figures appear in the light of the prospective purchaser of a car must be left to the imagination. According to Press accounts the yearly maintenance has been represented on an average by four figures, and on the same authority quotations which were received from one or two prominent garages were also in the same figurative region. It is difficult to reconcile the freely published statements, in the composition of advertisements, which lead one to believe that the modern car is the very personification of economy, with the astonishing amounts—to quote one: £1,140—considered necessary, as per tenders submitted, by garage proprietors, for the maintenance of the Mayoral car for a period of twelve months.

CONTINENTAL

THE WORLD'S LEADING TYRES.

FOR MOTOR CARS:

The Extra Heavy Square Tread Tyre;
The Tropical Renforcé Three Ribbed Tyre;
The Black Red Steel Studded, as used exclusively during the "Prince Henry Trophy" Race.

FOR MOTOR CYCLES:

The Extra Heavy Tyre, Ribbed Pattern;
The Rubber Studded, Non Slipping Tyre.

. .—All our Tyres are specially manufactured by our Home Company to suit the South African Climate and Roads, and stand UNSURPASSED in Quality.

STOCKS OBTAINABLE THROUGHOUT SOUTH AFRICA.

ALL MOTORISTS

SHOULD USE

TEXACO

PETROL

LOOK FOR OUR TRADE MARK.

RED STAR *AND A* GREEN T.

WE HAVE ONE BRAND ONLY.

—*A*—

High-Grade Motor Spirit,

THE BEST.

ASK AT ALL GARAGES FOR IT.

THE TEXAS COMPANY (S.A.) LTD.

The T.A.C. Programme.

The Transvaal Automobile Club programme opens with the competition for the Lezard Shield (a (new trophy) on the 7th and 8th of April, the latter being Easter Monday; the route chosen, it is understood, will be to Warmbaths and return. On Ancension Day, May 16th, the Motor Traders and T.A.C. Cups will be competed for, the venue to be disclosed at a later date. The trophy presented by the Continental Tyre Co. will be contested on Union Day, May 31st, and two following days, the objective being Rustenberg. The "Reyersbach" competition will be held on the last day of June. The contest for the Park Cup is billed to take place on August Bank Holiday, the outgoing run to be undertaken on the previous day; the route as on many former occasions will be the redoubtable Johannesburg-Potchefstroom road. The Speed and Hill Climbing Competitions take place, in the order named, towards the close of the Club season. the decision in respect to the former is not yet available; but it is, however, certain that Mulder's Drift will be selected to determine the hill-climbing propensities of competitors' cars.

Road Dangers.

One might expect to find outside of the Municipal area, stray animals impeding the progress of motor cars, and such, as a matter of fact, is often the case, but strange to relate this nuisance is by no means confined to the outlying districts, and horses, and other animals, are allowed to roam unchecked on some public suburban highways. Owners of these animals probably indirectly responsible for this state of affairs need to be reminded of the seriousness which attaches when their livestock are thus at liberty, and some attempt to control the animals' predilections for straying ought to be made. The police patrol the various roads, and might be expected to curb the itinerant beasts which cause so much annoyance to motor drivers and others by the incursions referred to, but so far as the authorities are concerned one is obliged to measure their vigilance in the matter by the fact that these pests are so frequently encountered.

How to Reduce Road Defects.

It falls to an American motor club to adopt an ingenious and effective method of calling the attention of those responsible for roads to the defects which, according to the members of the club, call for remedial action by those responsible. The *modus operandi* is along the following lines: The club in question have devised an effective scheme carried out with the aid of postcards, which contain a skeleton plan of certain streets, these are distributed among the various members, who are called upon to carry out the instructions of the club in this wise: When a member notes a bad piece of road he fills in the name of the street and other particulars of the vicinity with a view to easy identification. Marks are used to denote defects, for example, a circle would be used to indicate the position of a dangerous hole, a star a sunken place, and other road inequalities are dealt with after somewhat similar fashion. The cards when complete are forwarded to the City Engineer, or other responsible person. The scheme, briefly outlined, has much to recommend itself to the T.A.C., as a systematic notification of road defects would do much to improve the existing condition of roadways in Johannesburg.

Johannesburg Vulcanizing Works.

Messrs. G. & J. Ferguson have dissolved partnership, and the business will in future be carried on solely by Mr. G. W. Ferguson.

Draughtsman, used to Mine and Surface work, plotting and planning, as well as quantity surveying, requires appointment; excellent local credentials.—Apply, " J. B.," c/o *S.A Mining Journal*, Box 963, Johannesburg

Analytical Chemist.—SITUATION WANTED.

Some years practical experience in Government Laboratory in Cape Town. Advanced in Assaying and General Analytical Chemistry, Food and Water Analysis Also possesses good knowledge of Microscopy.—Address: D. C., c/o "S.A. Mining Journal," Box 418, Johannesburg.

CYANIDE of SODIUM, 120 %
ZINC DUST, SHEETS and SHAVINGS.
MABOR FUSION CUPELS and MATERIAL.
3 STAR CRUCIBLES and CRUCIBLE BARS.
3 STAR LITHARGE.
HARDWOOD MINING POLES and SAWING TIMBER.
"BRUNSVIGA" Calculating Machines.

RICHARD HEYMANN & CO.,
73/5 Exploration Buildings.
P.O. Box 2425.
Telephone 351.
Telegrams: "Extra."

The Bubola Process.

The secretary of the Bubola Syndicate, Ltd., informs us that permission has been granted by the Mines Trials Committee to conduct tests of the Bubola process on the Nourse Mines, Ltd. The preliminary work has been commenced, and the company will be in the position to start the trials in a short time. The directors of the company are very confident of the success of the trials.

A New Diamond Prospect.

Mr. H. R. Page has applied to the Bloemfontein Town Council for permission to prospect for diamonds on that portion of the town lands situate southwards from Victoria Road to the Kimberley line, and westwards to the town boundary, the period being for twelve months. The area referred to does not in any way interfere with the prospecting rights granted to Mr. Thomas Wright. The request was granted.

ENGINEER

Thoroughly experienced in Suction Gas and Steam Engines, Electrical and General Engineering, is open for re-engagement. First-class testimonials.
W 25, CENTRAL NEWS, JOHANNESBURG.

Advertiser, who has been Sub-Manager for several years of a large Corporation in South Africa, requires a position of trust; experienced bookkeeper; salary no object; would accept any position to commence with.—Apply, " S. L.," c/o *S.A. Mining Journal*, Box 963, Johannesburg.

Nourse Mines, Limited.

(Incorporated in the Transvaal.)

Declaration of Dividend No. 15.

NOTICE IS HEREBY GIVEN that an Interim Dividend of Ten per cent. (Two Shillings per Share) has been declared by the Board for the half-year ending 31st January, 1912.

This Dividend will be payable to all Shareholders registered in the Books of the Company at the close of business on 31st January, 1912, and to holders of Coupon No. 15 attached to Share Warrants to Bearer.

The Transfer Books of the Company will be closed from the 1st to the 7th February, 1912, both days inclusive.

The Dividend will be payable to South African Registered Shareholders from the Head Office, Johannesburg, and to European Shareholders from the London Office, 1, London Wall Buildings, E.C., on or about the 6th March, 1912.

Holders of Share Warrants to Bearer are informed that they will receive payment of the Dividend on presentation of Coupon No. 15 at the London Office of the Company.

Coupons must be left four clear days for examination, and will be payable at any time on or after the 6th March, 1912.

By Order of the Board,
RAND MINES, LTD., Secretaries.
S. C. STEIL, Joint Secretary.

Head Office: The Corner House.
Johannesburg, 17th January, 1912.

Mining Exhibition.

(Held under the auspices of the Chemical, Metallurgical and Mining Society of South Africa.)

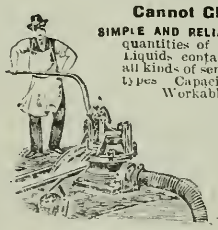
THIS EXHIBITION will be open in the ASSEMBLY HALL, S.A. School of Mines, Eloff Street, Johannesburg, from February 9th to March 2nd, inclusive, from 10 a.m. to 10 p.m. Free.

The Exhibits will comprise Apparatus, Models, etc., relating to all branches of the Mining Industry, such as Safety and Rescue Appliances, Chemical, Metallurgical and Mining Apparatus and Models of every description; specimens of crude and manufactured natural products of the country; plans, diagrams and photographs of mines, works and plants, machinery and apparatus, etc., etc.

Intending Exhibitors must make immediate application for space, which is extremely limited.

All Exhibits to be delivered to the undersigned (from whom full particulars may be obtained), not later than Tuesday, 6th February.

FRED. ROWLAND, Secretary.
9, S.A. School of Mines Building, Johannesburg.



DIAPHRAGM PUMPS

With improved Valves (Patented).

Cannot Choke or get out of Order.

SIMPLE AND RELIABLE. Unequalled for pumping large quantities of water by hand power, and for raising Liquids containing Sand, Gravel, &c., Sewage, and all kinds of semi fluids generally. In many sizes and types. Capacities from 2,500 to 14,000 gallons an hour. Workable by hand and mechanical power.

The Pump for any Emergency.

Fully Illustrated Price List sent free on request to—

HONIG & MOCK Limited,
7 MARK LANE, LONDON, E.C.
Phone 10819 Central. Telegrams: "Honig, London."

TURBINES. MACHINES FOR BRICKMAKING.

OFFERED BY
Act. Ges. vorm.
A. Kuhnert
& Co.,
Meissen, Saxony
(*Germany*).

CATALOGUES ON DEMAND.

Department of Mines.

THE following Government Notice is published for general information.

H. WARINGTON SMYTH,
Acting Secretary for Mines.

Office of the Minister of Mines, Pretoria.

No. 87.] [17th January, 1912.

Re ISSUING LICENCES TO PEG CLAIMS IN OUTSIDE DISTRICTS.

NOTICE IS HEREBY GIVEN that to meet the convenience of persons in outside districts, applications for first issue claim licences to peg claims in terms of Regulation No. 8 of the Third Schedule to Act No. 35 of 1908 (Transvaal), may be made to the undermentioned officials at the following places:—

(a) *Mining District of Pietersburg*—

To the Beacon Inspectors at Louis Trichardt, Potgietersrust, Haenertsburg.

(b) *Mining District of Pilgrim's Rest*—

To the Beacon Inspector at Sabie.

(c) *Mining District of Barberton*—

To the Beacon Inspector at Kaapsche Hoop.

(d) *Mining District of Heidelberg*—

In respect of the proclaimed public diggings on the farm Klipway No. 33 (Piet Retief District) to the Resident Magistrate at the town of Piet Retief, Transvaal; and to the Beacon Inspector at the town of Vryheid, Natal.

The applicants for such first issue licences must sign the application form in the presence of the magistrate, assistant magistrate, or beacon inspector concerned, who, when satisfied as to the identity, age, and competency of the applicants, will countersign the application form and return it to the applicant, who will be responsible for the forwarding of the same with the requisite amount of licence money to the Mining Commissioner concerned.

→ 3 ←

FACTS REGARDING THE

TRANSVAAL

WORTH REMEMBERING.

1. The **TRANSVAAL** is producing over one-third of the World's Gold Output.

2. **TRANSVAAL** Mines have spent 24 millions sterling on machinery and plant.

3. The **"South African Mining Journal"** is the **Official Organ** of the **Mine Manager's Association.**

The Week's Company Meetings.

WOLHUTER GOLD MINES.

The Life Question.

Native Labour Shortage.

Fighting the Dust Evil.

The fourteenth ordinary general meeting of the Wolhuter Gold Mines, Limited, was held on the 19th of January, in Cullinan Buildings, Mr. W. H. Dawe presiding. Those present were Messrs. H. O'K. Webber, S. C. Black, A. G. Gill, J. Jourdan, M. Honnet, L. Cohen, W. T Graham, J. E. Allingham, O. Scheuermann, W. Dold, F. W. Baxter, A. E. Adams, E. Wolfes, W. A. Shaw, B. Posensgen, A. Pratt and H. G. L. Panchaud, secretary, representing 159,369 shares out of an issue of 860,000.

The Chairman's Speech.

The Chairman: In accordance with the procedure decided on by your directors, the financial statements, together with the reports of the directors, consulting engineer and manager, have been in your hands for some days, and therefore I may assume that the information contained in these documents has received your attention.

Development.

The manager's report deals at length with the development during the past financial year. Out of the 10,605ft. developed and sampled, 5,097ft. were in the Deep Level Section, 5,444ft. in the East Incline Section, and 64ft. in the Mijnpacht Section. From these figures you will see that development has been fairly evenly distributed between the East Incline Section and the Deep Level Section, and the detailed results of the working in each level, given by the manager, show that the satisfactory values referred to in the last annual report have been maintained. This is further evidenced by the ore reserves, which on the 31st of October last gave a total of 808,780 tons, of a value of 6.45 dwts. per ton, over an estimated stoping width of 51.6in., that is an increase of 55,101 tons on the reserves of the previous year, the value of which was 6.45 dwts. per ton over 49.7in. Therefore, had the reserves to the end of the past year been estimated over the same width as that of the previous year—namely, 49.7in.—the average value would have been 6.69 dwts. per ton. The ore reserves are made up of 387,167 tons in the Deep Level Section, 335,930 tons in the East Incline Section, and 62,468 tons in the Mijnpacht Section, with 23,215 tons partially developed on the South Reef in the Deep Level Section. You will find that the total of the ore reserve does not agree with the figure which would be arrived at by taking the reserves of the previous year, plus the ore developed during the year, and minus the ore mined during the year, as on making the usual calculations at the end of the financial year certain variations in the width of the stopes, as well as the inclusion of ore previously classed as unpayable, are factors which had to be taken into account. There is one feature of special interest in connection with the development, and that is the large body of pyritic quartzite, which has been located between the 15th and 16th levels west of the east incline shaft. This lode is being stoped on the 16th level, west, where the value is 7.7 dwts. over 50in., and it has been traced in the 17th level, west, where the values, for 20ft., averaged 9.5 dwts. over 56in. The pyritic quartzite lode has also been worked in the Mijnpacht Section, where it has been of a uniform and payable nature. I was informed recently that a statement had been circulated to the effect that development had been confined to the ground nearest the Meyer and Charlton (that is, the Mijnpacht Section), while very little development had been done on the eastern side—that is, adjoining the New Goch Gold Mines. The data given in the manager's report shows how erroneous this statement was, as little development was done in the Mijnpacht Section, and during the past year 40 per cent. of the ore mined came from the deep level section, 45.2 per cent. from the east incline section, and 14.3 per cent. from the Mijnpacht section, and these figures approximate very closely to the percentages of the ore mined from the different sections during the previous financial year.

Shortage of Labour.

The manager points out that mining operations, particularly during the last three months of the financial year, were considerably handicapped owing to the shortage of native labour. The question of the substitution of machine drills for hand labour has received most careful consideration, but in many of the working faces the use of machine drills is not advisable on account of the effect this method of mining would have on large sections of the hanging wall in the faulted ground. Undoubtedly in many parts of the mine the best results can be obtained by hand labour, but a continued shortage of labour would make it necessary to forego that advantage, and, instead, to secure the best results obtainable from machine drills. It is unusual for this company to suffer from a shortage of labour, as the mine has always been popular with the natives, who have voluntarily sought employment there in large numbers. Owing to the drought the supply of labour during the last few months has been adversely affected, in a manner which is quite exceptional at this season of the year. I think, however, that I should be careful not to convey the impression that the shortage is entirely due to the unpropitious season, as we have to bear in mind that the labour requirements of the Rand have increased very materially, and competition in recruiting has become much keener, and, unfortunately, much more expensive. In view of this fact it is satisfactory to note that the average working costs for the past year show a reduction of 10.7d. per ton. There is an increase of 40,000 tons milled, as compared with the figures of the previous year, while the grade of ore treated shows a slight advance—from 6.56 dwts. to 6.71 dwts. per ton. I am also pleased to be able to mention that the extraction has improved from 92.8 per cent. to 94.6 per cent.

Finance.

The profit on working last year amounted to £172,163, which is an increase of approximately £50,000 on the results for the previous year. The credit balance brought forward from the 31st of October, 1910, amounted to £31,625; the working profit, as mentioned, was £172,163; while sundry revenue provided £2,808—that is, a total to the credit of the appropriation account of £206,597. The items of expenditure against this were: profits tax and auditors' fees £8,105; directors' remuneration £1,000; expenditure on capital account £20,197; the first instalment paid to the Government on account of the purchase price of the mineral rights under the bewaarplaatsen and waterrights, £7,931; English income tax and bearer warrants written off, £1,241; and dividends Nos. 7 and 8, £129,000—giving a total of £167,474. Of the amount expended on capital account of machinery and plant, £8,290 for shaft sinking, and £2,156 on buildings. Your directors had much pleasure in declaring two interim dividends, of 7½ per cent. each, making 15 per cent. for the year, and these declarations you will be asked to confirm. I have briefly recounted the leading features in the reports submitted to you, and congratulate shareholders on the satisfactory results obtained during the past year. You will no doubt have noted that your consulting engineer considers that there is every reason to anticipate that the operations for the current year will be at least equally successful. There are a few points on which shareholders desire information—namely, whether the company has obtained the right to work out the thirteen bewaarplaatsen claims, which were referred to at the annual meeting held on the 17th of December, 1909; what effect the acquisition of these rights will have on future profits, and on the life of the mine; what the life of the mine will probably be, and whether, in view of increased profits, future dividends are likely to be increased also. In regard to the undermining rights under the bewaarplaatsen and water rights, I have much pleasure in informing you that the agreement with the Government has been duly signed and completed. The last time I made reference to this question I told you that the basis of an agreement had been arranged with the Government and that the terms which had been agreed to were that the company should receive a fixed allowance of 2s. 6d. per ton, and in addition, would get 25 per cent. of the net distributable profit, after allowing for the profits tax, but no account would be taken for capital expenditure incurred. Further negotiations with the Government were carried on, with the object of replacing those conditions by a fixed annual payment. The result of these negotiations was that the Government agreed to accept £79,310, payment of the same to be made in ten annual instalments of £7,931 each, the Government to receive profits tax on the gold won from the ground in question. The exact area of the mineral rights acquired is equal to 12.3 mining claims.

LIFE OF THE MINE.

The question of the life of the mine is one which I approach with great diffidence, though I recognise that it is a question of the most vital importance to shareholders. As you are aware, the period during which work can be carried on in a given area is subject to many varying conditions, such as the dip of the reef, the width of the ore body, and its value. It is true that for the purpose of arriving at the amount of capital expenditure, which has to be authorised, and consequently taken into account, when calculating the amount of the profits tax to be paid to the Government, a figure has to be decided on as representing the life of a mine; but I might point out that this figure is purely arbitrary and is the result of an arrangement come to between the Government and the company concerned, with a view to allowing the amount to be amortised to be dealt with within a reasonable period. Consequently, you will see that the figure chosen to represent the life, for the purpose in question, while quite satisfactory so far as estimating the profits tax is concerned, would only approximate to the actual life of the mine. Bearing in mind the variable factors to which I have already referred it seems to me that the only estimate which can be given is that which is based on the results obtained from claims which have already been worked out. On this basis I submit the following estimate:

		Claims.
The area of the property originally was		163.03
The undermining rights under the bewaarplaatsen and waterrights recently acquired from the Government equal		12.3
making a total of		175.33
From this we deduct an area, which is north of the outcrop, equal to	8.69	
and also exclude the area of the large dyke, equal to	3.36	
together equal to		12.05
Total reef-bearing area, including bewaarplaatsen and waterrights		163.28

	Tons.
The total ore reserves as at the 31st of October, 1911, amounted to	808.780
less, say 10 per cent. for sorting	80,878
Milling tons as at 31st October, 1911	727,902
Ore actually milled to same date	2.602.590
Estimated total milling ore obtained from 84.26 claims	3.330,492

The foregoing represents the tonnage obtained from 84.26 claims, which have been worked out, and assuming the existence of the same conditions, the remaining 79.02 claims should yield 3.130,080 tons. Therefore on this assumption the milling tons remaining would be as follows:

	Tons.
Ore reserves—milling tons—as at 31st October, 1911 ..	727,902
remaining undeveloped in 79.02 claims	3.130.080
Total	3,857,982

Therefore, if milling be continued at the present rate, namely, 360.000 tons per annum, we get a life of 10.7 years.

FAIR ESTIMATE.

In dealing with the foregoing estimate your consulting engineer points out that this is in exact proportion, assuming that the percentage of payabel ore and reef widths will be the same in the undeveloped claims as has been the case in the ground worked. Regarding 53.8 of the unworked claims which are in the deep level section, our information is more limited than that in connection with the central and western sections. But your consulting engineer considers the foregoing to be a fair estimate of the life, as if there be any shortage in the tonnage to be obtained in the undeveloped sections it would probably be made up from ore which has been classed as unpayable up to the present time. I have given this estimate because I wish to reply to the inquiries of shareholders as fully as possible, but at the same time I should like to again emphasise the fact that this estimate is based on results already obtained, and is subject to variation from the causes enumerated. The third question is in regard to the effect of the future profits on dividends. During the past financial year the monthly profits showed a gradual increase from £13,000, for November, 1910, to £15,238 in October, 1911, during which last-mentioned month the tonnage milled amounted to 30,250 tons. During the first month of the current financial year the tonnage milled was slightly less, namely, 29,000 tons, and the profit £15,081. Assuming that the monthly profit be maintained at £15,000, and that no unlooked-for large expenditure is to be incurred on capital account, your company would be able to increase the amount of the dividend from 15 per cent. to 17½ per cent., and as your consulting engineer anticipates a successful year I trust this forecast will be realised.

The Dust Evil.

The question of allaying the dust evil in the gold mines is one which has occupied most serious thought for a long time past. I refer to it now because at a meeting of the South African Institute of Engineers, held in December last, Dr. Aymard stated that it was generally known that he had said that the mining industry was not sincere on this question, and that he still held that view, and would prove it. The accusation in regard to the want of sincerity on the part of those responsible for the management of the mines and the wellbeing of the employes is a very serious one, and one which, from the knowledge at my disposal, I consider to be incorrect. The managers of groups of mines in which this company is included made representations to me regarding the injustice of the statement made. On their mines precautions have been taken by providing for a supply of water at the working faces, and though efforts have been made to provide a more satisfactory means of dealing with the dust evil, experience has gone to prove that the use of water is the most satisfactory method of allaying the dust. At the Wolnuter water has been used freely for a very long time past, and I venture to say that it would be difficult to find a mine on the Rand which is better ventilated or more free from dust. I can speak on this point with authority, as I have proved the correctness of my statement by visiting different parts of the mine, down to the lowest level, on numerous occasions. But though the conditions on this property are admittedly good, the manager afforded Dr. Aymard every facility for making experiments in connection with his method for preventing the dust rising from drilling. That the idea did not prove to be as successful as it was hoped it would be was disappointing, but that fact does not nullify the assistance rendered to Dr. Aymard, and it certainly goes a long way to prove the fallaciousness of the statement that the mining industry is not sincere in regard to this most important question. In conducting the affairs of a huge industry one must be prepared to meet with disappointments in the carrying out of new ideas, but these disappointments result in renewed effort, and one certainly does not expect that a charge of indifference to the welfare of the employes will be made by a man whose personal experience must have convinced him that such a charge could not be substantiated.

Meetings in London.

You are all conversant with the suggestions which have been made recently to the effect that the annual meeting of the Rand gold mining companies shall in future be held in London. There would be considerable difficulties in adopting such a course. In the first place it appears to be the intention of the Transvaal Companies' Act that the annual general meetings of companies registered in the Transvaal shall be held in the Transvaal, and the question of the adoption of the reports and financial statements, as well as the election of directors and auditors, have to be dealt with at such meetings, while the company's articles of association provide that the meetings shall be so held, and it is a moot question whether under the Companies' Act it would be possible to amend the articles of association to enable the meetings to be held in Europe. Therefore, it meetings were held annually in London they would be of a more informal character, and they would not have the power to deal with the questions I have mentioned. In addition to this it would be necessary that several of the responsible officials of the company (at least the consulting engineer and the secretary), should attend such meetings in London. This would entail expense, and to some extent disorganise the working arrangement. After carefully considering the question I came to the conclusion that the point could best be met by holding the annual meetings in Johannesburg some two months later than it has been customary to do up to the present. This would enable all the reports and the financial statements to be sent Home and circulated to the shareholders in Europe, so that they might have time to consider the same before sending out proxies to be used at the annual meeting. I see that the same conclusion has been arived at by the Rand Mines, the Central Mining and Investment Corporation, the East Rand Proprietary Mines and the General Mining and Finance Corporation, and it appears to me that it should be a course which will be satisfactory to shareholders. As far as the Neumann Group of Companies is concerned, I might state that the directods of the various companies of the group are being consulted in regard to this proposal at the present moment, and I feel sure that they will all approve. In conclusion, on behalf of my co-directors, I wish to express the appreciation of the services rendered by Mr. S. C. Thomson, and the manager, Mr. A. R. Robertson, towards attaining the satisfactory results of the past financial year. I now beg to formally move the adoption of the reports and accounts, as submitted.

Mr. L. Cohen seconded the motion.

The motion was carried.

The retiring directors, Messr. W. H. Dawe, C. S. Goldmann, J. H. Ryan, W. T. Graham, Sir George Farrar, Messrs H. O'K Webber, S. C. Black E. A. Wallers and A. G. Gill, were re-elected and the appointment of Mr. Wallers in place of Mr. Distel confirmed.

Messrs. A. Eckart Beckmann and H. J. Macrae were reappointed auditors.

RANDFONTEIN CENTRAL.

The Labour Question.

Finances Reviewed.

Dividend Forecast.

The annual meeting of the Randfontein Central G.M. Company was held yesterday morning in the board room Mayfair offices. Mr. J. W. S. Langerman presided, and among the other shareholders present were: Sir Willem van Hulsteyn, and Messrs. N. J. Scholtz, F. S. Tudhope, J. H. Tiley, S. C. Black, P. M. Duncan, Lionel Cohen and J. H. Crosby, secretary.

The share representation was 2,993,862, out of an issued capital of 4,000,000.

Chairman s Speech.

The Chairman said: Since the occasion of our last annual meeting the absorption of the Randfontein South Gold Mining Company, Ltd., by this company, then foreshadowed, has been carried into effect. Meetings of the shareholders of both companies were held on the 15th of March last, at which resolutions giving effect to the sale and purchase of the South Company's property and assets, were unanimously carried, and a subsequent meeting of the South Company was held on the 31st of March in accordance with the requirements of the Companies Law, at which the resolutions of the 15th of March were confirmed and that company placed in voluntary liquidation.

Agreement with South Company.

The agreement entered into between the companies provided that this company should acquire the property and assets of the South Company as at 31st December 1910, for a consideration of 2,000,000 fully-paid shares of the nominal value of £1 each, this company, for the purposes of the transaction, increasing its capital from £2,250,000 to £4,500,000 by the creation ot 2,250,000 new shares of which 2,000,000 were to be allotted to the shareholders of the South Company and the balance of 250,000, plus a like number on hand, making in all 500,000 shares to be held in reserve. The property of the enlarged company now consists of an area equal to 2,150 mining claims, and its five reduction plants, comprising one thousand stamps and tube mills together with sand and slime treatment plants in proportion are capable of crushing and treating 3,150,000 tons of ore per annum. There are ten main shafts on the property sunk to an average depth of 1,631 feet, all of which are thoroughly equipped with headgears, hoisting engines, pumps etc. The length of the property, following the strike of its reefs, is approximately seven miles, and the Randfontein Leader and West Reef have been opened up along the whole of this distance. Other payable reefs underlying and overlying these have been discovered and developed in various sections of the property and are being mined at the present time.

Year's Crushing.

Crushing has been carried on throughout the year at the Porges, South, North and Robinson mills, and since the 1st of March at the Central mill. The average number of stamps operating during the twelve months was 745, and the quantity of ore treated was 2,159,032 tons, the yield in fine gold therefrom being 632,621 ozs. The value of this, together with sundry revenue, derived from other sources, was £2,661,280 18s. 1d., or 24s. 7.83d. per ton, the cost of production was £1,807,039 2s. 4d., or 16s. 8.87d. per ton, and the working profit £854,241 15s. 9d., equal to 7s. 10.9d. per ton. In addition to the above tonnage of ore from stopes and stope dumps a large quantity of dump rock of low value was crushed and treated at the central reduction works for the purpose of setting the plates and extractor boxes, and for testing the whole of the mill and reduction works.

Stamping Power Limited.

It is a matter of keen disappointment to us that up till now we have been unable to bring the whole of our 1,000 stamps into operation. I fully expected that we should have been in a position to do so long before the end of the year under review, but unfortunately we experienced a great shortage of native labour that upset all our calculations. When I last addressed you I had no misgivings regarding the native labour supply, as our then existing contracts were sufficient to meet all requirements. Several important sources of supply, however, unexpectedly failed us, with the result that until the end of the year we were something like 5,000 boys short of the number necessary to keep all our stamps at work. This unexpected turn of events has naturally seriously affected our earnings during the year. I am happy to inform you that we have been successful in arranging a new contract for the supply of native labour under which our full complement should be provided by the end of March. The new contract came into operation on the 1st inst., and since then our supply of labour has been so substantially augmented that we look forward to our mills being in full operation in April.

Initial Difficulties.

The initial stages in the career of a mining proposition nearly always present difficulties that only time and experience are able to overcome. At the central property, or as we now call it the Northern Division, we have experienced these difficulties which are always encountered in starting up a new plant and getting the mine in shape with a complement of new employes and raw natives, and in this instance they have been greater than usual, owing to the magnitude of the operations and great extent of the property, coupled with a shortage of native labour and certain mining troubles fully explained in the manager's report. All these obstacles are gradually being overcome, and with the promise of an adequate labour supply we should have no serious difficulties to contend with in the future. The plant and reduction works are the most up-to-date on these fields, and are running smoothly and without a hitch of any sort, and are fully capable of coping with the quantity of ore proposed to be treated. In order to obtain the best results from our narrow reefs it is essential that as much as possible of the waste rock should be sorted out. This year, owing to shortage of natives, it has only been possible to sort out 5.61 per cent., and the grade of ore milled has suffered in consequence, and does not represent what could be accomplished under more favourable conditions.

Development.

Development has been actively carried on throughout the year, the total number of linear feet driven, risen, and sunk being 87,541 feet, including 1,747 feet of shaft sinking, viz.: No. 2, 300 feet; No. 3, 465 feet; No. 4, 167 feet; No. 5, 125 feet; No. 8, 113 feet; No. 9, 165 feet; and No. 10, 205 feet; and east reef, 208 feet. Besides the work expressed in linear feet, there was accomplished 527,668 cubic feet of stations, sumps, etc. The ore reserves at the close of the year are certified to be 6,637,271 tons, of an average assay value of 6.633 dwts., equal to 28s. 2.1d. per ton, of which 5,658,859 tons are valued at 7.29 dwts., equal to 30s. 11.6d. per ton, and the balance at 2.832 dwts., equal to 12s. 0.4d. per ton. The aggregate ore reserves show an increase of 347,944 tons over the preceding year's figures.

The Exploitation of New Reefs.

At our last annual meeting I referred to the exploitation of other reefs in addition to west reef and Randfontein leader, traversing the property. Of these the new and east reefs proved to be so satisfactory in value and permanent in character that they have been extensively developed during the past year. The new reef is a narrow body and of this we have developed 263,500 tons of which 225,000 tons are valued at 5.6 dwts over milling width and about the east reef the manager reports that it is a reef of great width, of satisfactory value, and presents no difficulties in mining. It has been traced northward for a distance of 3,000 feet. Since the close of the year the manager reports further on the east reef as follows: "Development on the second level continues satisfactory. To the north twelve feet have been driven, assaying 9.5 dwts. over 60 inches while the south drive advanced twenty-two feet, valued at 8.2 dwts over 60 inches. The reef intersected at fifty feet in the borehole in the footwall at No. 3. station, incline depth six hundred feet, assays 5.4 dwts over 133 inches or 7.7 dwts over 77 inches. The cutting of chambers at shafts Nos. 2, 3, and 4 for the purpose of second stage hoisting has been completed. Nos. 3 and 4 are equipped with sinking hoists and a rock hoist and sinking hoist are in course of erection at shafts 5 and 2 respectively.

New Machinery and Plant.

In pursuance of the programme outlined when the amalgamation of the companies took place, we have installed a great deal of new machinery and plant during the year. This comprised the equipment of the Stubbs, or No. 1 section, completion of the central division equipment and the substitution of electrical motors for steam engines at the southern division, sections 2, 3, 4 and 5. At No. 1 section the work completed and under way consists of pumps, motors and skips for the shaft and trucks for the mine. On the surface permanent headgear man hoist, 50 drill air compressor, substations and transformers, compound European and native change houses, drill sharpening shop, married and single quarters and boarding house, etc., have been erected, and the railway connecting this section with the Central reduction works has been completed and the necessary rolling stock for same provided. The opening up of this section is being pushed forward as rapidly as possible, a large amount of development and preliminary stoping is being done and it is expected that in the course of a few months this section will be contributing a large tonnage of ore to the batteries.

Electrification.

Considerable progress has been made in the electrification of sections 2, 3, 4, and 5 of the southern division. At all shafts electric cables have been duplicated and electric pumps and motirs installed. No. 2 and No. 4 mills, No. 5 mill haulage. No. 2 crushers, No. 4 and 5 sorting plants, cyanide plants, workshops, etc., have been converted from steam to electric drive, and the substations have been enlarged and the number of transformers increased in order to convey the additional power to the new centres of consumption. The electrification of mills at No. 3 and 5 sections has been delayed on account of late delivery of the motors, but will be completed shortly. Other new work accomplished on the southern division is the erection at No. 2. section of a filter plant for the treatment of accumulated slime, loco. repair shop at No. 3, additions to native hospital, new waste rock bins and elevators, native change houses, fire service installation, new boarding house and quarters for married and single European empliyes, etc. The work enumerated and others of minor importance have been carried out efficiently and economically. The electrification of the plant on the southern division has been the means of effecting great economy in the handling and treatment of ore and amply justified the expenditure incurred in connection with the scheme. The plant for the treatment of accumulated slime, to which I have referred, has been working successfully for several months past, and enhancing the profits made at Section 2.

Financial Position.

I have endeavoured to give you an idea of the condition of the company's mines and works, and I shall now pass on to the consideration of its financial position. I shall in the first instance recapitulate the transactions that have taken place since 1909. In that year the Randfontein Estates made a debenture issue of £2,000,000 for the purpose of providing this company with funds for the development and equipment of its property. Out of this sum only £1,420,000 was available for that purpose, the balance of £580,000 being absorbed in the following items: Repayment of loan from Sir J. B. Robinson £193,000, amalgamation expenses of the original Central Company £44,000, debenture interest during the currency of equipment and development £169,000, and finally the expenses and underwriting commission in connection with the issue, £174,000. The development and equipment of the Central property cost £1,900,000, or £480,000 more than the funds provided. During last year the amalgamation of the South and Central Companies was effected, and thereafter the equipment of the Stubbs Section and the electrification of the southern division proceeded with, involving an expenditure of £177,000, which, added to the above-mentioned £480,000, makes a total deficit of £657,000. The directors expected to be able to liquidate this deficit by the sale of portion of the 500,000 reserve shares created for the purpose under the scheme of amalgamation, and leave the current profits of the year available for dividends, but unfortunately the depressed condition of the share market rendered it impossible to realise the shares excepting at a price far below their intrinsic value, and the directors had therefore no alternative but to apply the profits of the year to meet the over-expenditure on capital account, and thus forego the declaration of a dividend.

Improved Prospects.

The necessity of passing the dividend for last year was, I need hardly say, a matter of extreme regret to the directors, but the prospects are so improved that they have no hesitation in promising you that the company will be in a position to declare a dividend at the end of the current year. The equipment of the Stubbs Section and the electrification of the southern division are now nearly completed, arrangements have been made for a supply of natives sufficient to bring the whole of our thousand stamps into operation, and the financial position of the company, as the result of applying its profits to meeting the deficit, is now much sounder than if its reserve shares had been sacrificed or its liabilities increased by raising a special loan for that purpose. The gross earnings for the year amounted to £854,242, and a credit balance was taken over from the South Company at 31st of December, 1910, making in all £901,019. This sum has been appropriated in the following manner: Amalgamation expenses £69,454, debenture and other interest £119,376, profits tax, £70,317, licences, rates, taxes and audit fees £20,967, ordinary and extraordinary capital expenditure £619,052, and other sundry items, including depreciation of machinery, spares and stores taken over from the South Company £10,873. In addition to the above sums appropriated out of profits a further sum of £129,757 was expended on capital account during the year, which brought the indebtedness to the Randfontein Estates Company up to £365,186, in reduction of which we have paid over to the Randfontein Estates Company gold, unrealised at 31st of December, to the value of £187,133, thereby reducing the debt to £178,053. This amount will not form a charge against the profits of the company for the current year, as the Randfontein Estates Company has agreed to liquidate the debt by taking reserve shares in exchange, so that the company starts the year practically free of debt. I have endeavoured, in the course of my remarks, to make the present position and future prospects of the company as clear to you as possible, and there only remains to me, before formalty moving the adoption of the reports and accounts, the duty of placing on record the board's appreciation of the efficient and loyal services rendered to the company by its officials and employes during the past year.

The report and balance-sheets were unanimously adopted.

The retiring directors, Sir Joseph B. Robinson and Mr. T. S. Tudhope, were re-elected, and the auditors, Messrs. C. L. Andersson and Co. and S. Fleischer, were reappointed.

The meeting then terminated.

LANGLAAGTE ESTATE.

The Dividend Question.

The annual meeting of the Langlaagte Estate and G.M. Co., Ltd., was held on Wednesday in the Board-room, Mayfair offices. Mr. J. W. S. Langerman was in the chair, and there were also present: Sir Willem van Hulsteyn, P. M. Duncan, N. J. Scholtz, F. S. Tudhope, J. H. Liley, S. C. Black and J. H. Crosby, secretary. Shares represented personally and by proxy numbered 183,706, out of an issued capital of 869,500.

Chairman's Speech.

The Chairman said: Before formally moving the adoption of the directors' report and audited accounts for the year ended the 31st of December, 1911, I shall take the opportunity of explaining in full the position and prospects of the company. The revenue derived from milling operations was £736,853 or 23s. 6.87d. per ton, the cost of production £539,021 or 17s. 2.94d. per ton, and the working profit £197,832 or 6s. 3.93d per ton. The profit derived from the estates account and the sale of stands on the Mayfair Township was £21,037, making a total profit from all sources of £218,869.

Accounts.

Reference to the accounts will show that the balance of revenue and expenditure amounting to £218,869 11s. has been appropriated in the following manner: Dividends Nos. 42 and 43, 15 per cent., £130,425, profits tax £14,610 18s., licences, rates, taxes and audit fees £7,678 12s. 3d., contributions to miners' phthisis relief fund and sanatorium £662 12s. 6d., sundries £1,100 5s. 4d., and capital expenditure £64,392 2s. 9d. In addition to the amount appropriated out of profits, a further sum of £28,183 0s. 4d. was expended on capital account, including £10,117 7s. 10d. from 1910 account. The cash and unrealised gold on hand at 31st of December amounted to £58,429 14s. 10d. The company's reduction plant ran 339 days and crushed 625,187 tons of ore, which yielded in fine gold 175.497 ounces. The year's development work consisted of 909 linear feet shaft sinking and 17.304 feet of rising, driving, winzing, etc., besides 61,524 cubic feet of stations, etc. The ore in sight at 31st of December is estimated at 1,281,307 tons, of which 677,226 tons are Main Reef and 604,081 tons South Reef. We have during the year expended the sum of £82,457 15s. 3d. on capital account. Of this amount £19.625 11s. 3d. was ordinary capital expenditure, i.e., shaft-sinking, etc., and the balace of £62,832 4s. extraordinary capital expenditure. The latter amount was incurred in connection with the installation of a new Butters' filter plant for the treatment of accumulated slime and for new hoisting engines, crusher station, aerial gear, workshops, workmen's quarters, generator, sub-station, cables, etc. Excepting the slime plant, most of the plant was erected at lock B and forms a portion of the new installation required there in order to cope with the additional ore being drawn from this section.

Capital Expenditure.

Under ordinary circumstances the whole of this extraordinary capital expenditure should have been defrayed by the sale of a portion of the 80.400 reserve shares in hand, which were created for the purpose when the Laanglaate and Block B sections were amalgamated, but the depressed state of the share market rendered this course impossible without a sacrifice of the reserve shares at a price incompatible with their intrinsic value, which the directors did not feel justified in making. We were therefore obliged to appropriate the sum mentioned out of the current profits of the company, a course which involved the declaration of reduced dividends for the year. The negotiations entered into between the company and the Government for the acquisition of the mineral rights of an area equal to forty-eight claims, to which I referred at our last annual meeting, have not yet been concluded, but the matter is now so far advanced that an agreement may be arrived at in a very short time. Regarding the position of the company's two mines, namely, the Langlaagte Estate and Block B, it has now become necessary to draw the bulk of the ore from the mill from the mynpacht and claims of the latter mine. It is extremely regrettable under these circumstances, that we should have encountered during the year a poor zone of ore at Block B, a difficulty nearly all mines from time to time have experienced, and eventuall successfully emerged from. Further, we have not had a sufficient supply of native labour during the last six months, necessitating the employment of machine drills in stopes where native labour would have produced a better grade.

Future Prospects.

With regard to the future prospects of the company, I may say that I have every hope that better grade rock will shortly be opened up and that improvements in other respects will also take place. Satisfactory arrangements have been made to ensure a larger supply of native labour for some years to come; the new filter process for the treatment of accumulated slime, of which we have some 500,000 tons, will contribute substantially to the revenue, and we look forward to an increased income from the Estates account by a more extensive sale of stands on the Mayfair township, as the result of the Municipal water service having been extended to the township. In view of the gradual exhaustion of the Langlaagte Estate section, I have to inform shareholders that preparations for drawing the whole of the ore from the Block B mine are practically completed, and that that mine has an available tonnage of ore estimated to keep the full mill running for a further twenty-five years.

The report and financial statements were adopted.

The retiring director, Mr. J. W. S. Langerman was re-elected, and the auditors, Messrs. C. L. Anderssen and Co., and S. Fleischer, were re-appointed, their remuneration for the past audit being left in the hands of the directors.

This was all the business.

RANDFONTEIN ESTATES.

The Financial Position.

Mr. J. W. S. Langerman, M.L.A., presided over the meeting of the Randfontein Estates G.M. Co., Ltd. Among those present were Sir Willem van Hulsteyn, Messrs. N. J. Scholtz, S. C. Black, F. S. Tudhope, Lionel Cohen, J. H. Tiley, S. V. Mann, W. Williamson, W. H. Andrew, A. Hebbard, E. Moore, J. L. Gauf, J. A. Hebbard, G. Gardner, T. Adams, M. L. Pessen, J .B. Pryde, J. T. Halse, W J. Reid, E. Crowther, A. C. Webster, J. A. Yule, H. Vickers, W. T. Temby, and J. H. Crosby (secretary), the share representation (present and by proxy) being 506,929 out of an issued capital of £3,001,458.

Chairman's Speech.

In moving the adoption of the report and accounts, the Chairman said : Gentlemen, following the usual custom, I shall take the opportunity, before formally moving the adoption of the directors' reports and audited accounts, of addressing a few words to you regarding the position of the company, the work accomplished during the past year, and its future prospects. The property of the company remains practically the same as it was a year ago. It consists of eight freehold farms in extent 31,726 acres, two mynachts, 1,414 mining claims, 18 bewaarplaatsen, eight machine stands, residential stands, townships, water rights, reservoirs, machinery, and plant, buidings, etc. The shares and debentures held by the company amount to £7,814,762 5s. 8d., an increase of £231,336 4s. 6d., on last year's figures. The financial position of the company at the close of the year was as follows: Total amount available for appropriation, £595,327 7s. 7d., comprising balance from 1910 account, £539,170 3s. 3d., and balance of 1911 expenditure and revenue account, £56,157 4s. 4d. Of this amount £233,197 16s. 11d. has been appropriated for the purchase of debentures from the Randfontein Central Company, etc., £4.704 16s. 10d. for licences, rates, taxes and audit fees, and £664 5s. 11d. for sundries, leaving a credit balance at December 31 of £356,760 7s. 11d. The balance-sheet under "sundry creditors" shows an apparent overdraft of £344,499, but against this we have since received from the Randfontein Central Company gold unrealised at December 31 to the value of £187,133, which reduces the amount at that date to £157,366. Similarly in the balance-sheet under "sundry debtors," the indebtedness of the Randfontein Central Company appears at £365,186, but the gold unrealised at December 31 since received for credit from that company, amounting to £187.133, reduces its indebtedness to us to £178,053.

Robinson Township.

Our negotiations with the Government regarding the township have not yet been carried to a successful issue. In certain important particulars we were unable to acquiesce in the recommendations of the Townships Board, and the question at issue has, therefore, been referred to the Government for its consideration. I have every hope of a speedy settlement. During the past year the two Randfontein subsidiary companies, namely, the Randfontein Central and Randfontein South, camo to an arrangement whereby the former acquired the assets and liabilities of the latter company for a consideration of 2,000,000 Central shares, which necessitated the increase of its nominal capital from £2,250,000 to £4.500,000 in shares of £1 each, of which 4,000,000 are issued and 500,000 are held in reserve. The affairs of the Randfontein Central have been duly dealt with at its annual meeting held to-day, and shareholders of the Randfontein Estates Company will in due course be furnished with a report of the proceedings. From these proceedings it will be noticed that the directors of the Randfontein Central Company, under the scheme of amalgamation with the South Company, undertook to carry out certain works and improvements involving further heavy capital expenditure, which included the completion of the equipment and development of the Central, the equipment of the Stubbs section, and the electrification of the South section, in order to meet the altered conditions following on the amalgamation of the two companies, which had for its chief object the reduction of working costs and securing efficiency in operation and administration under single control. To meet this expenditure 500,000 reserve shares were created, and the company had every reason to believe that it would be in a position to dispose of them on favourable terms, and so leave the profits earned free for distribution among the shareholders. Unfortunately the market became so depressed owing to political and labour troubles in Europe that it was impossible to realise those shares, except at a great sacrifice, which the directors did not feel justified in doing, nor did they feel justified in raising a special loan to meet the expenditure pending the eventual sale of the reserve shares.

DEFERRED DIVIDEND.

There was consequently no other course open to them but to withhold the payment of a dividend and to utilise the profits earned towards defraying the expenditure incurred in carrying out the policy undertaken with the amalgamation of the companies, and which could neither be stopped nor delayed without serious injury to the vital interests of shareholders. Though the passing of the dividend may perhaps cause a temporary disappointment to some of the shareholders, it will appeal to the large majority that the policy pursued has been by far the best, as the company is now in a much sounder position financially than it would have been had the directors, in order to meet the necessary expenditure, raised a further loan, and so have increased the company's liabilities, or had increased the capital of the company by the issue of reserve shares under their intrinsic value. I have referred at some length to the position of the Central Company in order to make it clear to you that owing to our large holding in that company our main revenue would naturally flow from that source, so that the passing of the dividend by the Central Company has rendered it impossible for the Randfontein Estates Company to declare a dividend, which is a matter of extreme regret, but entirely unavoidable in the circumstances. I had every hope when I addressed you a year ago that from then onwards we should be able to distribute regular and substantial dividends to our shareholders, but this anticipation has unfortunately, for the reasons stated, not been realised.

In view, however, of the fact that the equipment of the Central Division is completed, and the electrification of the Southern Division and equipment of the Stubbs Section nearing completion, together with the improved prospects of the company as the result of an assured sufficiency of native labour, I have no hesitation in promising you that it and this company will be able to declare dividends at the end of the current year.

Then followed the remarks on the shortage of native labour which were published in "The Star" yesterday. After a protest had been made by Mr. Lionel Cohen on behalf of the local shareholders, and Mr. Gaaf on behalf of European investors against the delay in the issue of copies of the report and balance-sheets, and Mr. Langermann had promised to bring the matter before the directors, the report and balance-sheet were unanimously adopted.

The meeting terminated with the re-election of Mr. J. W. S. Langerman to the board, and the reappointment of Messrs. C. L. Andersson and Co. and S. Fleischer as auditors.

Contracts Open.

The Municipal Council of Johannesburg invites tenders for the supply of bricks (Feb. 3); also for the erection and completion of animals' cages at the Zoo, Hermann Eckstein Park (Feb. 6); also for the supply and delivery of 10 or 25 electric tram cars (April 1).

The Benoni Municipality invites tenders for the supply and delivery of certain fire appliances (Feb. 21).

The Secretary of the Tender Board, S.A.R. Offices, Johannesburg, invites tenders for the erection of three pairs semi-detached masonry quarters at Bethlehem O.F.S., with alternative tender in brick (Feb. 6); also for the erection and completion of catering stores and office buildings at Braamfontein (Feb. 6).

The Municipal Council of Johannesburg invites tenders for a screen to the Gaol intake and fencing around same, near the Gaol, Johannesburg (Feb. 7).

The Chairman of the Union Tender Board, P.O. Box 371, Pretoria, invites tenders for the undermentioned services:—Drainage works at the Lunatic Asylum, Pietermaritzburg; provision of a new water supply at the Grahamstown Asylum, Cape Province; for the supply of 1,200 lbs. potassium iodide, 300 lbs. unguentum hydrargyri, 1,000 tins (2oz) for the Department of the Interior; for the supply of medicines, drugs, dressings, medical and surgical appliances, surgical instruments and sundries, as catalogued in the 1911-1912 price-list of Messrs. Lennon, Limited, to all Government institutions and establishments, both Union and Provincial, situate within the Cape Province, which have no separate contracts for the service in question; for alterations, additions and drainage to Magistrate's Court, Government Square, Johannesburg (Feb. 14); for the supply of sanitary fittings and materials for Government Asylum, Pietermaritzburg, Natal; for the supply of the undermentioned services to the Department of the Interior for the Cape Colonial Forces during the period commencing the 1st April, 1912, and terminating the 31st March, 1913: (1) Harness, saddlery, horseshoes, nails, veterinary drugs, instruments, etc. (Cape Colonial Ordnance Department, Kingwilliamstown); (2) groceries, fresh eggs, fresh milk, bread, paraffin, meat, etc.; washing hospital linen (Military Hospital, Kingwilliamstown); (3) groceries, fresh eggs, butter, fresh milk, bread, paraffin, meat, etc.; washing hospital linen (Military Hospital, Umtata); (4) mealie meal and meat for native rations at Booysens Rifle Range, Johannesburg (Transvaal Volunteers, Johannesburg); for the erection of new cells at the Police Barracks, Jagersfontein, O.F.S. (Feb. 14); for supplies to the undermentioned divisions of the Department of Agriculture during the year commencing 1st April, 1912 and terminating 31st March, 1913:—Veterinary Bacteriological Division, Onderstepoort, Pretoria: Witbank coal, ice, "White Rose" paraffin, compound meat, head collars for horses, neck collars for cattle, small boxes for packing laboratory preparations, harness. Horticultural Division, Experimental Station, Warmbaths: Sulphate of potash, superphosphates (high grade), bone meal, nitrate of soda. Experimental Station, Ermelo: Superphosphates (high grade). Experimental Station, Potchefstroom: Sulphate of ammonia, sulphate of potash, superphosphates (high grade), bone meal. Potchefstroom Agricultural School: Superphosphates (high grade), coal, "White Rose" paraffin, 2½lb. grain bags, groceries, etc. Sheep Stud Farm, Ermelo: Nitrate of soda, muriate of potash, basic slag, superphosphates (high grade), bone meal, groceries, meat. Stud Farm, Standerton: Coal, smithy coal, basic slag, dissolved bones, mealie fertilizer, superphosphates (high grade). Tobacco Division, Tzaneen Experimental Station: Salt. Poultry Division, Pretoria: "White Rose paraffin. Brands Division, Pretoria: Branding irons. Cedara Agricultural School, Natal: Fertilizers, salt, mustard oil, lubricating oil, linseed oil (raw and boiled), castor oil, motor oil, turpentine, paraffin, white lead, red lead, putty, paints, nails, screws, bolts, iron, cotton-waste, solder, coal, glue, glass paper, emery cloth, window glass, tools, knotting varnish, lamp wicks, brushes, brooms, combs, soap, candles, calico, epsom salts, sulphur, wire-netting, riems, hose piping, dips, tar, charcoal, coke, matches, harness, dubbin, meat, groceries, knife polish, etc. Tweespruit Experimental Farm, O.F.S.: "White Rose" paraffin, steam coal. Grootvlei Experimental Station, O.F.S.: "White Rose" paraffin, steam coal. For supplies to the undermentioned Government Departments of the Union of South Africa during the period commencing the 1st April, 1912, and terminating the 31st March, 1913:—Government Printing Works, Pretoria: Paraffin, coal (nut), oils, petrol, wire nails, cutting sticks, ferro-prussiate papers, typewriter ribbons, ink, Stolzenberg files, mimeographs, etc. Irrigation Department: Tools, stores, timber, tubes, valves, tents, percussion drilling tools, etc. Mines Department: Paraffin, white metal, oils, soaps, hardware, etc. Native Affairs Department: Coal, wood, meal, meat, brushware, hardware, chloride of lime, etc.; contracts for the destruction of vermin; uniform requirements for European and native police and messengers, comprising clothing, boots, leggings, belts, etc. Public Works Department: Meat, preserved, fresh and frozen, mealie meal, coal, caretakers' requisites, explosives, electrical goods, hardware, oils, soaps, tools, carbide of calcium, etc. For the undermentioned services to the South African Police during the financial year commencing the 1st April, 1912, and terminating the 31st March, 1913: Schedule No. 1—Oat-hay, mealies, lucerne, oats, bran, bedding (veld hay), rock salt (for delivery at Police Stations in Johannesburg, Germiston and Boksburg districts). Schedule No. 2—Oat-hay (baled), mealies, bran, bedding (veld hay), rock salt, coarse salt, coal (nut or round), candles, chloride of lime (for delivery free on rail contractor's station). Schedule No. 3—Photographic material, medical and veterinary drugs and instruments, etc. (for delivery in Bloemfontein; for delivery at Police Stations in Johannesburg, Pretoria, Germiston, Krugersdorp, Roodepoort, Boksburg, and Bloemfontein, and for delivery free on rail contractors' station for supplies required at any other Police Station). Schedule No. 4—Head collars (stable), mule and horse shoe nails, brushware, soft soap, etc. (delivered at Police Station or free on rail at Pretoria West, Bloemfontein, Capetown and Pietermaritzburg) (Feb. 21).

THE SOUTH AFRICAN
Mining Journal,
WITH WHICH IS INCORPORATED
The South African Mines, Commerce and Industries.
ESTABLISHED 1891.

VOL. IX., PART II.] FEBRUARY 3, 1912. [No. 465.

HEAD OFFICE: 119-126 Exploration Building (3rd Floor).
Telephone **913.** P.O. Boxes **963** and **418.**
Cable and Telegraphic Address: **"MINING JOURNAL."**

LONDON EDITOR AND MANAGER FOR GREAT BRITAIN: Percy Snowden, 119-120 London Wall, London. E.C., to whom all communications must be addressed.

GERMAN AGENTS: Dean-Mayer Co., Linkstrasse 39, Berlin, W., 9; Rudolf Mosse, Jerusalemer Strasse, 46-49 Berlin, S.W. 19; H. C. Wolff, Residenzplatz, M. 85, Kempten, Bavaria.

AMERICAN AGENTS: Gotham Advertising Company, 95 Liberty Street, New York.

Copies of this journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Office as above.

NOTICE.—The postage of this issue of the *S.A. Mining Journal* is: South Africa, 1d. All other parts, 2d.

CONTENTS.

PAGE
Notes and News ... 779
Topics of the Week:
  Mineral Exports and machinery Imports ... 781
  Cheap White Labour ... 782
The Tin Industry ... 783
Machine Drilling in Stopes ... 784
Outstanding Rand Features and Figures in 1911... 784
Latest from the River Diggings ... 785
The Arbuckle Cone ... 785
The Venterskroon Gold Field ... 786
Miners' Phthisis in Cornwall ... 786
The Randfontein Central ... 787
Geological Research on the Rand ... 788
Mines of the Witwatersrand—VIII. The Knights Deep 789
The Year with Premier Diamonds ... 791
Ancient Mine Workings in the Transvaal.—II. ... 792
Present Position of the New Rand, Ltd. ... 793
"*S.A.M.J.*" Anniversary Number ... 794
An Accurate Method for Determination of Gold and Silver in Working Cyanide Solutions ... 795
Accidents in Transvaal Mines.—II. ... 796
The Equipment of the Apex Colliery ... 797
Rhodesian Section:
  Latest Charterland News ... 799
  Rhodesian Dividends ... 800
  The Year in Rhodesia ... 801
  Rhodesia's Mineral Output ... 803
Correspondence and Discussion: "Ventilation on Mines," "An Inventor's Enquiry" ... 805
Mining Men and Matters ... 805
December Grade, Costs and Profits ... 806
The Week in the Sharemarket ... 807
Engineering Notes and News ... 809
Commerce and Industries ... 812
Automobile Notes ... 815
Index to Advertisers.

Notes and News.

The Industry in Parliament. Though the Union Parliament has only been sitting a few days, the industry, as usual, has been well in the limelight. Dr. Macaulay's motion regarding settling miners on the vacant spaces appears to have been well received. The report of the Medical Commission on the subject of miners' phthisis will be issued shortly. A point about which more will shortly be heard is the withdrawal from the estimates for the coming year of the small amount voted last year to aid mining in the outside districts. This is hardly true economy, and certainly not progress.

* * * *

Anglo-German Tin. The Anglo-German Tin Company held its first statutory meeting on Thursday, Mr. Herbert Moss presiding. A full report of the proceedings will appear in our next issue. The position disclosed was a most satisfactory one. Ample funds to continue the present vigorous exploratory work were on hand; latest reports from the property were excellent; titles were in perfect order, and the outlook was most promising.

* * * *

The Work of the Last Quarter. The season in which quarterly reports duly begin to reappear has been well opened, as usual, by the Albu, Barnato, and Goerz groups, whose reports upon the progress of the last three months of the year, at their respective mines, have been issued with commendable promptness. Others, such as those of the City and Suburban, New Heriot, Springs and Brakpan, add to the interest as well as the fullness of the list. Taking the mines of the Albu group first, we find that the Aurora West has improved its profits and increased its cyaniding capacity; the Meyer and Charlton has also increased its profits considerably; the Van Ryn, similarly, while showing a notable increase in the rate of development. The Cinderella has not been behind in the matter of improved profits, but the feature of the quarter has been the connection with the Cason and the establishment of conditions which should be followed very shortly by the removal of restrictions upon mining expansion. In the case of the Roodepoort United, West Rand Consolidated and New Goch, also, increased profits are a salient feature of the quarter's results.

* * * *

Barnato Reports. The Barnato group have not the same uniform improvement to show as the Albu group, but results generally are satisfactory. At the New Primrose, for instance, prospecting on the older section of the mine continued to yield gratifying ore discoveries; at the Witwatersrand, in the same way, development operations have proved distinctly satisfactory; at the New Unified, also, where improved extraction as a result of running the tube mill, has been a feature of the end of the year. The chief event at the Consolidated Langlaagte has been the progress with the foundations for the new reduction plant, of which the work of erection will be begun at an early date.

* * * *

Anglo-French and East Rand. The attention of the directors of the Anglo-French Exploration Company has been drawn to certain statements in the Press in regard to this Company having disposed of its holding in the East Rand Proprietary Mines, Ltd., but the following are stated by the Secretary to be the facts:—As a consequence of the amalgamation of the subsidiary and other companies with the present East Rand Proprietary Mines in 1908, my company was entitled to receive about 104,000 East Rand shares in exchange for the shares held in the subsidiary and other companies, as stated in my company's annual report for the year ending December 31, 1907. Of this holding, about 50,000 shares were disposed of in 1908, about 34,000 shares in 1909, and about 19,000 before the end of October, 1910, so that at the end of 1910 (as the shareholders were informed in the report for that year) the holding of my company in the East Rand Proprietary Mines had been reduced to 1,000 shares. My board desire to state in the most explicit manner possible that no sales of shares were made by this company as a result of any knowledge of the irregularities which have recently come to light.

* * * *

Stock Exchange Year.

Once again the Stock Exchange has had to struggle throughout the twelve months, writes the *Bankers' Magazine*, against disturbing political conditions, both at Home and abroad, and also against the effect of a constant stream of new capital creations, but monetary conditions have been favourable enough. The feature of the year has been the great irregularity of movements—an irregularity which applied not only to departments, but to periods of the year. In the early months there was quite a "boomlet" in English railways and some other British stocks, but afterwards there was a persistent downward movement, largely due to the disturbed condition of international politics. Low-water mark was touched in the middle of September, when the market value of a representative group of three hundred and eighty-seven securities fell to £3,559,000,000, a far lower total than was reached at any time during 1910. Following on the passing of Morocco crisis there was a substantial recovery from the lowest, and the valuation at the close of the year shows a total of £3,611,000,000, or about £23,000,000 below the total of a year ago. The value of nine British and Indian Funds has dropped from £726,000,000 to £707,000,000, a loss of £19,000,000, or 2¾ per cent.; while fifteen South African mines have fallen from £78,750,000 to £73,000,000, a decline of £5,750,000, or 7 per cent. On the other hand, nine railways in British possessions have risen from £92,000,000 to £105,000,000, a gain of £13,000,000, or 14 per cent.

* * * *

I.C.S. Students.

On January 20 an interesting and instructive visit was paid to the Apex Colliery by the students of the International Correspondence Schools. They were received by the Manager, Mr. J. R. Thom, and the engineer, who personally conducted them over the property, both surface and underground. Elsewhere will be found a detailed description of the plant and equipment for which we are indebted to the I.C.S.

* * * *

Rhodesia Exploration Company's Meeting.

Following the lead of Scottish shareholders at Glasgow, a meeting in London of the Rhodesia Exploration and Development Company approved the scheme for amalgamating with the Gold Fields Rhodesian Development Company. In his address, Mr. Walter Forbes, who was in the chair, intimated that the recent circular was published so that shareholders might judge for themselves of the advantages or disadvantages of the scheme, but he did not explain how they could do this properly in the absence of full data as to the assets of the contracting parties. That a full disclosure of the material facts has not been made he himself admitted by stating that the Directors took full responsibility for declining to publish details of all the shareholdings. To give a list, he contended, would be "prejudicial to the interests of the shareholders." Shareholders who attended the meeting did not trouble to press for further details, so that they cannot now complain. With regard to the absence of a second dividend for the past year, the Chairman said that they had hoped conditions would be better during the latter half than they were in the first, and then he went on to refer in explanation of the expectation not being fulfilled to "wars and rumours of wars, industrial conflict and the general disinclination of people to embark in any speculative markets." He did not, however, touch upon one of the chief reasons for this disinclination so far as the Rhodesian market is concerned—namely, the bad odour into which this market has fallen on account of the unpleasant revelations that have been made in connection with companies which are associated with the Rhodesian Exploration itself. That these revelations have not been forgotten was clearly indicated by one of the questions put at the meeting. Apropos of the carrying through of the amalgamation, one of the speakers in the body of the hall asked whether the shareholders would have an opportunity of inspecting the memorandum and articles of association of the new company. In reply to this, Mr. Latilla said the articles were not yet in existence, but if it was the desire of shareholders they would, when drafted, be open to inspection at the Company's offices. Mr. Latilla in course of his speech also gave the interesting information that Dr. Hans Sauer, who recently resigned the Chairmanship of the Company, has now no more than 1,690 shares in it, and that Sir Abe Bailey holds none at all.

* * * *

The Diamond Market.

According to latest London advices the Diamond market has undergone no change, but has continued in the same firm state, evidence of which may be found in the further rise that has taken place in various diamond shares. A brisk business was transacted during mail week, the Diamond Syndicate having sold the produce of the De Beers, Kimberley, and Dutoitspan mines. The parcels were readily taken, and the Syndicate would have been able to dispose of double the quantity if the stones had been on hand. Activity as regards Premier production has likewise been noticeable. During mail week the company showed the November output, and the major portion of the goods is already sold. Buyers who usually negotiate with the Premier Company have come forward well. With the demand that exists for Premier goods, there is no reason to suppose that a single rough stone will be left in the hands of the selling agency. The Diamond Syndicate are exhibiting the produce of the Wesselton Mine. These stones at present are in vogue, and the demand materially exceeds the supply.

* * * *

South African Shipping.

The secession of the German East African Line from the South African Conference, which has just been announced, is a matter of considerable importance, and, although its effect may easily be exaggerated, there can be no doubt that a new situation has been created which may be the cause of trouble hereafter. The denunciation by the German Company of its agreement with the other lines trading to the Cape dates from the 1st instant, but it is expressly stated that, for the present at any rate, no hostile tactics will be indulged in, and that the course of events in the future must depend entirely upon the negotiations now in progress regarding the relative positions of the shipping companies doing business with South Africa. In other words, while the German company has for the present terminated its obligations to rival concerns, the directors propose, for the present, to conduct their business as heretofore. This is a very reasonable attitude, and is of hopeful augury. Not only the German East African Line, but many other shipping companies trading to the Cape are anxious to know precisely how they stand in connection with the recent purchase by the Royal Mail Steam Packet Company of a controlling interest in the Union-Castle Mail Steamship Company. This attitude is a very natural one; nevertheless, it is probable that the Royal Mail Steam Packet Company will be able to return a satisfactory answer to its competitors. There is no intention on the part of the new powers in the Cape shipping trade to upset the policy which has hitherto been adopted.

* * * *

Diamond Jubilee of the Royal School of Mines.

On Wednesday, December 20, the Royal School of Mines commemorated the 60th year of its existence by several special exhibits. In addition to exhibitions of apparatus and experimental demonstrations in the various departments, there was a lecture on "Active Nitrogen," by Prof. the Hon. R. J. Strutt, F.R.S., and performances by the Royal School of Mines Dramatic Society and the Royal College of Science Musical Society. In the mining department, special mention must be made of the Temple-Ingersoll "electric air" rock drill, which was shown under working conditions, and of the prospecting camp, carried out to real life with great ingenuity, with its tent, camp fire and panning operations. The metallurgical department had one of the most interesting exhibits for many years. As well as an electric furnace being shown in operation, a great number of students took active part in the representation of a mediæval mint, where medals were made and presented to the visitors. With each medal the following brief history of the school was given: "At the Museum of Economic Geology, Craig's Court, three classes, for teaching metallurgy, mineralogy and analytical chemistry were formed in 1841. Their success justified further development, and a definite school of instruction in mining and metallurgy was started under Sir Henry de la Beche on November 6, 1851, in the new buildings of the Museum of Practical Geology, Jermyn Street, which had been opened by Prince Albert on May 12 of the same year. The metallurgical department, under the able guidance of Dr. John Percy—the father of metallurgy as a science—continued to develop until, in 1880, transference to larger laboratories at South Kensington resulted. The Mining Department soon followed, and in 1881, under a scheme of reorganisation, the present title of Royal School of Mines was given. Since then the school has made rapid progress, so that this session sees it a member of the Imperial College of Science and Technology and about to enter a new home worthy of its traditions and of the work it has to do. Thus to-day metallurgy has reached its 70th birthday, and the Royal School of Mines commemorates its diamond jubilee."

* * * *

Diamond Taxation in G.S.W.A.

The proposed alteration in the taxation of diamonds in German South-West Africa appears to have been prompted by the reaction which has followed the period of prosperity which was associated with the discovery of diamonds in German South-West Africa in 1909 and 1910. The great scarcity of money has brought about a number of collapses. In particular a crisis is manifested in the diamond district owing to the operation of a variety of causes. In the first place the scarcity of labour renders it difficult to work the diamond fields on a rational basis; secondly, the increasing cost of production places a considerable burden on working, and in the third place the export duty of 33⅓ per cent. is specially unpleasantly felt in view of the higher working expenses. It is no longer possible in most cases to work profitably in the diamond district, and it thus happens that almost all of the 100 diamond mining companies which were formed in 1909 and 1910 have already disappeared from the scene. In general working is only still carried on by the Colonial Mining Company, which has a monthly production of about 20,000 carats, the German Diamond Company with an output of 15,000 carats per month, and by the Kolmanskop Company, the United Diamond Mines of Luderitz Bay and the Diamond Leasing Company belonging to the State. All other diamond companies have suspended operations owing to unremunerative working, and it is not impossible, the Berlin newspapers say, that the companies still at work will be unable to maintain working to the present extent. The scarcity of workmen, the high fiscal taxes and the great scarcity of money have caused numerous insolvencies. The production of diamonds remained considerably behind that of the previous year; for, according to official statistics for the period April 1 to November 30, 1911, the output amounted to 516,801 carats, being a decrease of 37,451 carats as compared with 554,252 carats in the corresponding period of the previous year. During the months April-September, 1911, the output amounted to 398,924 carats, against 424,186 carats for the same months in 1910, in October 60,803 carats, against 61,764 carats in October, 1910, and during November the decrease was even more remarkable, the output showing a total of 57,074 carats, against 68,302 carats in November, 1910. The deficiency against the previous year, of 37,451 carats, represents a value of about 1,000,000 marks. According to the *Colonial Correspondence*, negotiations for a new regulation of the South-West African diamond taxes will commence in the middle of January at the Imperial Colonial Office. In the conference representatives of the German Colonial Company for South-West Africa, the German Diamond Company, and the Luderitzbucht Diamond Company will participate.

TOPICS OF THE WEEK.

MINERAL EXPORTS AND MACHINERY IMPORTS.

Apparently the connection between the export of minerals from South Africa and the value of machinery imports is less direct than might be imagined. In 1911, for instance, though the former increased considerably, the latter show no notable expansion. No doubt this is attributable to the fact that the heavy rate of expenditure on capital account that marked the year 1910 was not maintained during last year. A summary of the trade of British South Africa during 1911 is contained in the monthly blue-book just issued by the Union Department of Commerce and Industries. So far as the Union is concerned, the totals show a decrease of nearly a million sterling in imports and an increase of over three millions in exports. The decrease in imports, however, is more than accounted for by the diminished amount of specie and Government stores brought into the country. The figures for actual merchandise show an increase of over £900,000. On the other hand, the increase of £3,160,979 in the exports of South African produce, represents less than the total increase in the gold exports, which amount to £3,273,549. When allowance has been made for a decrease of rather under £200,000 in the value of diamonds exported, and increase in tin and copper exports, it will be seen that, apart from the produce of the mines, there is a decrease in the exports of South African produce. Tin exports have increased from £175,994 to £244,691, and copper ore and regulus from £478,722 to £573,537. The diamond figures go to show that the smaller number of carats exported realised higher prices. The total for 1911 was 4,690,889 carats, valued at £8,281,907, as against 5,586,625 carats valued at £8,479,346. Among the items which show a notable decrease in the export statistics are ostrich feathers (nearly £20,000), in regard to which an increase in the quantity exported indicates that in general the prices realised have been lower. A decrease of £18,000 in the exports of fodder and forage may be reversed in the current year by reason of the removal, announced the other day, of certain restrictions upon the landing in England of such cargoes coming from South Africa by the ordinary routes. Tea shows a slight decrease, and sugar a big decrease (from £38,000 to £11,000), but the chief feature of the export statistics, as has been foreshadowed by the monthly returns, is the reduction of the maize exports from just under £700,000 to just over £400,000, a drop of over forty per cent. Gratifying increases, on the other hand, are reported in regard to certain other items. Thus, coal exports have risen by nearly £100,000, which is probably to be explained in large measure by the increase in the number of vessels calling at South African ports and taking coal into their bunkers. Wines also show an increase, the exportation for 1911 amounting to 87,502 gallons, valued at £24,989, as against 52,043 gallons, valued at £11,598, in 1910. This indicates that better prices are being obtained, or that better qualities of wine are being exported.

Machinery imports into the Union have not increased, on the whole. Under the head of machinery and parts (except locomotives) the total imports for the year 1911 were valued at £2,958,955, as against £3,663,938 in 1910. Mining machinery imports were only £947,283, as against £1,279,403 in 1910. Under this head, and under electrical machinery, the falling off is mainly shown. The imports of electrical machinery fell from £803,168 in 1910 to £528,395 in 1911. Agricultural machinery and windmills, however, show notable increases, the former having grown from £148,964 in 1910 to £196,417 in 1911. Under the head of iron and steel manufactures, which includes such lines as piping and galvanised iron, the year's imports were valued at £1,229,065, as against £1,440,795. Another evidence of agricultural expansion is furnished by the fact that fencing materials imported in 1911 were valued at £337,553, as against £285,633 in 1910. We note that His Majesty's Trade Commissioner in South Africa (Mr. R. Sothern Holland), commenting on the features of the imports to the Union during the year, points out that the increase is spread over a number of articles, thanks to the general growth of the purchasing power of the country and the development of agricultural and allied pursuits. There was a falling off in respect of mining and electrical machinery, but this would seem to be due to the recent completion of important mining works and electrical stations. Notable increases were shown by apparel and cotton goods; oils, furniture, drugs and chemicals, cutlery, hardware and tools, motor cars and motor bicycles, stationery and books, woollen goods, enamelled ware, stoves, leather wares, linoleum, tobacco and pipes, musical instruments, phonographs, and gramophones, bicycles and tricycles, jewellery, plate, and silverware, and confectionery. Agricultural machinery, fencing wire and standards, binding twine, and garden and farm seeds all show an improvement, and in this connection Mr. Sothern Holland remarks that during a recent tour he was greatly impressed by the rapid progress of agriculture, improvement in the methods adopted by the farmers, and the manner in which private enterprise in this respect is being encouraged by the Union Government. The consequent growth of the market for agricultural machinery deserves the careful attention of manufacturers. Enough has been written to draw attention to the significance of the year's export of minerals and imports of machinery, the detailed figures regarding which we hope to print in our next issue.

CHEAP WHITE LABOUR.

The Rand has been startled during the week to learn that enquiries are being made in London on behalf of the industry into the possibility of importing a supply of cheap white labour for the mines. The serious plight that some mines are in for labour affords collateral evidence of the truth of the rumour. Mines on the margin of payability, that demand the handling of big tonnages to benefit by the economies of large-scale production—such, for instance, as the Knights Deep, described in this issue—must have an adequate supply of labour if they are to be worked at a profit. This is true, of course, more or less, of every mine on the Rand. The labour supply is the one fly in the ointment. The ore in the mines is an unalterable factor, but its reduction is, in mathematical terms, a function of the other variables, capital and labour. The provision of the former is to-day conditioned only by the labour factor. In the circumstances, and, considering the gravity of the situation, it is incumbent on the controllers of the industry to continue to examine every possible means for solving the labour problem. No official information has reached us regarding the enquiry into European cheap labour, but we should certainly not be surprised if it were true. The difficulties involved in the introduction of such labour have more than once been set forth in these columns. When the labour crisis was at an acute stage seven years ago the question was freely discussed in all its bearings. The dismal failure of the navvies imported on contract to build the Springs-Eastwards Railway will be fresh in the minds of readers. The objections to such a white labour body—drawn, of necessity, from the lowest class of whites—working with unskilled blacks on the one hand and with the present skilled whites on the other hand, is patent to everybody. Socially, politically, and economically the proposal bristles with difficulties. Nevertheless, it is worth serious consideration, if only as a choice of evils. The future of the industry still depends on a solution of the labour problem, and, for all the progress recently made in other directions, the future of the country still depends upon the industry. In this connection we may quote some pertinent passages in Mr. Creswell's historic report advocating cheap white labour, which gives one furiously to think:—"The working costs which would ultimately be arrived at on a white labour basis would be very materially affected by *changes in the ruling rate of wage* which would follow changes in the social and economic conditions ensuing," says a significant paragraph in the report. If this meant anything, it meant that it would be possible to reduce working costs by further reducing the wages of the white workman, even though the average wage of the contemplated white labour force would be, according to the estimate of that report, no more than 11s. 10d. a day! The following paragraphs of the report, in which is discussed the future of wages under the all-white policy, should be pondered by the men they most affect:—"770. According as this average standard daily rate of pay decreased in response to the change in conditions mentioned above so would working costs be reduced. 771. The average rate of wages in the Californian mines forming the basis of his comparisons is stated by Mr. Ross Browne to be 11s. a shift. 772. From figures supplied to us from the Governments of New Zealand and Australia the average ruling rates of pay in those countries appear to be about one-half to two-thirds of that prevailing on these fields. In Western Australia the ruling rates for various occupations range between one-half and two-thirds of the average pay in this country. 733. The 12th Biennial Report of the Bureau of Labour statistics of the State of California (page 163) gives wages and hours by selected occupations in gold mines in different sections of California in 1906. The occupations referred to in this table include all classes of ordinary labour on the mines, exclusive of technical and clerical staff. The average of these is \$2·775, equal to 11·56s., a shift for a white force of foremen, artisans, miners, labourers, etc. 774. It is impossible to predict the level of wages which will rule eventually in this country, and how far they will approximate to those ruling in other mining countries employing all-white labour. On the one hand, it is difficult to see why conditions should not prevail here in course of time which will make this country as attractive to the white working man as Australia or California." We now know that Mr. Creswell's 11s. would, in all probability, resolve itself into something nearer his original estimate of 5s. a day—as the majority of the mines could not pay more and keep working. Mr. Chaplin made that point very clear only a few days ago at Germiston. It is only fair to that report to add that it contemplates that the all-white policy would introduce a considerable increase in the activity of the Trades Unions. These, apparently, would have their hands full fighting for the maintenance of old rates of pay under the new conditions; but the Majority Report does not hold out hope that the efforts of those organisations would do more than delay the inevitable reduction in white wages all round, which, even the report admits, would follow the adoption of the all-white labour policy.

THE TIN INDUSTRY.

A Dwindling Output—Want of Ore Reserves at Groenfontein—Prospecting Activity in the Neighbourhood.

The statistical records of tin ore production in the Transvaal, which are furnished by the Mines Department, do not present an altogether gratifying appearance at the conclusion of the year 1911. During the period June to December, 1910, the total value of tin concentrates produced was £175,748, at the end of the following six months, that is, to the 30th June, 1911, the figure totalled £248,810 for the half-year, but at the conclusion of the half-year ended 31st December, 1911, we find that concentrates valued at £165,211 had been produced for the period concerned. Fluctuations in the price of tin tend to obscure the real rate of productivity, perhaps, so that it may be added that the tonnages of concentrates for the several periods were 1,766·500, 2,073·440, and 1,473·276 respectively. It was thought many months ago that activity in the tin fields was rapidly in the ascendant, and that by this time a marked increase in the output of the Transvaal province would have been apparent. On the contrary, the yield has fallen more rapidly than it rose, and at the moment production is at a comparatively low level, as may be gathered from the fact that it is lower than in December last, when the yield of concentrates was 173·192 tons, as against 391·314 tons in July, that is to say, less than half.

Falling Off at Groenfontein.

In looking round for the causes of this falling off, we find that while Zaaiplaats and the Rooiberg are still doing well, a very much diminished rate of production has been taking place at Groenfontein. In the last quarterly report, that to 30th September, 1911, which has only lately been published, it was announced that through the depletion of the ore reserves it was not found feasible to keep the mill running satisfactorily, and that arrangements had been made to let the mill for the purpose of crushing ore from the Zaaiplaats lease temporarily. We learn that mining operations on the Zaaiplaats lease ground have now been suspended for a similar reason, and there would seem to be at the moment very little, if any, of what can be termed reserve ore. The mill is still running on day shift, however, but unless a supply of ore is forthcoming at an early date there appears a prospect of tin mining being confined for a time to the hydraulicing work which is now in progress. Drills are constantly at work, and two are being put down within a short distance of each other and of the mine workings on the lease ground. The lesson to be learnt from all this is that unless advance prospecting is actively carried on, the process of tin ore production in that neighbourhood, at any rate, can quickly degenerate into a sort of hand-to-mouth struggle for existence. The vast area of alluvial ground owned by the T.C.L. in the vicinity of Groenfontein, some of which is unquestionably very rich in cassiterite, will probably become a large and important source of profit at no distant date, provided that the water supply now available remains more or less permanent. Thus, in some measure, the disadvantageous position of the company as regards visible ore reserves may be largely obviated.

Zaaiplaats Improving.

At Zaaiplaats the great ore chambers show no signs of shrinkage; on the contrary, we believe they are larger than they were when we wrote of them in the *Journal* a few months ago. The additional treatment plant now in course of erection should materially increase the output and profits. On adjoining areas prospecting is being carried on continuously by various syndicates. Immediately adjacent to the lease workings on Zaaiplaats the No. 2 Syndicate have sunk a shaft to a depth of 180 feet or so, and reached the pegmatite zone, where tin indications are beginning to appear freely. On Graumann's claims the pegmatite zone is also being investigated with a certain amount of success, while further to the north, along the Zaaiplaats-Mooihoek boundary, steps are being taken to make a careful examination of the same horizon. At Groenvlei a forward, or, rather, downward policy is said to have been decided upon, so that in a month's time or so we should begin to learn how the ore bodies there are shaping in depth. At Appingendam operations are for the moment in abeyance, as far as the largest claim-holders are concerned, but we understand that this circumstance is due to the necessity of reconsidering the scheme of work rather than to any unsatisfactory evidence in the prospecting shafts. The developments to date from the latter point of view are said to be sufficiently encouraging.

Anglo-German Tins.

The following is a copy of a cable received from Usakos, dated 30th January, 1912:—" Discovered source white tin occurring in quartz reef on the north side of claim 13,158. Can trace the reef for 200 feet. Cap of reef carries lumps tin. Tinhill shaft has been sunk vertical to a depth of 10 feet; results good. Ample labour."

Rand Collieries.

LIMITING OPERATIONS.

The financial depression having made it impossible to submit to shareholders of the Rand Collieries a scheme for the capitalisation of the present debt of about £115,000 and for the provision of further working capital, the board has decided to limit operations to the sinking of the east incline shaft. This shaft, being a continuation of the No. 1 vertical shaft, commences 2,790 feet below the surface and has already attained a depth on the incline of 652 feet. The General Mining and Finance Corporation, Ltd., has agreed to continue to advance for the present the necessary funds. The payable ore fully developed amounts to 261,947 milling tons of an average value of 7.46dwts.

The Quest.

Satisfactory progress is being made on the property of the Quest G.M. Company. The *Klerksdorp Record* states that 30 stamps are working, and preparations are being made for an extension of the crushing plant. The cyanide and slimes plants are in full swing, and the results have so far been most encouraging. The supply of native labour is not equal to the demand, and it is only this question of boys which limits the operations and prevents a much larger output of work.

" Largest Diamond Mine in Africa."

The Marquard correspondent of the *Bloemfontein Post* writes:—" Some keen prospecting has been in progress in this district, and especially on the farm Mooihoek, in the vicinity of the town. It appears from what I can gather that the prospecting was carried on with great success. On interviewing Mr. G. W. Appleby, the late manager of the Monastery mine, who is the prospector on the farm Mooihoek, I was informed that there is absolutely no doubt of a mine being located on the farm, and that it has the prospect of being the largest diamond mine in Africa."

OUTSTANDING RAND FEATURES AND FIGURES IN 1911.

Analysis of the Costs, Grade and Profits in the Year.

The publication of the Chamber of Mines' Analysis for December, 1911, completes the record of the year for the gold-producing companies of the Transvaal. The following table gives a concise summary of the results obtained on the Rand during the year:—

1911.	Tons Milled.	Yield per Ton.		Costs per Ton.		Profit per Ton.		Total Profit.
		s.	d.	s.	d.	s.	d.	£
January ...	1,855,232	28	0	17	11	10	1	930,059
February ...	1,712,198	28	6	18	3	10	3	874,612
March	1,960,678	27	7	17	11	9	9	945,415
April	1,926,583	27	7	17	7	10	1	971,858
May	2,002,926	27	6	17	10	9	7	956,823
June	1,986,559	27	6	17	11	9	8	960,381
July	2,095,220	27	2	17	10	9	4	969,687
August ...	2,107,809	26	8	17	9	8	11	968,457
September	2,037,329	27	4	18	1	9	4	952,665
October ...	2,083,900	27	0	18	0	9	1	948,278
November	2,089,387	27	6	18	3	9	3	965,729
December	2,030,437	27	10	18	5	9	7	968,897
Totals & Averages—								
1911 ...	23,888,258	27	11	18	0	9	7	11,415,861
1910 ...	21,432,541	28	6	17	7	10	6	11,216,105
1909 ...	20,543,759	28	11	17	1	11	6	11,794,376

The salient features of the last three lines of figures are the gradual diminution of recovery, the equally gradual increase of costs, and the consequent lowering of profits per ton milled. Owing to the greater quantity of rock crushed, however, the total sum recorded as profit was greater in 1911 than in 1910, but less than in 1909. Within the last two years recovery has fallen by exactly a shilling, and costs have been augmented by an almost equal sum, so that the falling off to be made up for by greater crushing effort has been very nearly two shillings per ton, or almost 7 per cent. of the average value obtained per ton milled during 1909.

Those who are disposed to take the most disparaging view possible of the future of the Rand gold mining industry will see in these figures the handwriting on the wall which foretells the steady decay of the profit-yielding capacity of the Main Reef series, and the unmistakeable tokens of the inevitable end. We are unable to find any grounds for this gloomy sort of outlook, for, as we have pointed out before, although a gradual falling off in richness may, and probably will, be experienced in the deeper levels, there is as yet no evidence that the decrease will be sufficiently rapid to exceed the economies and efficiencies of even present-day methods for a great many years to come. In the meantime, ore reserve values continue to be sufficiently satisfactory. It will be time enough to consider the advisability of adopting pessimistic views when the mining companies of the Witwatersrand are unable to give assurances with regard to this very important condition.

MACHINE DRILLING IN STOPES.

Interesting Experiments at the Geldenhuis Deep—Solid v. Hollow Steel —Promise of the Flottmann Drill.

Of recent years the breaking of ore by rock drills has been carried out far more extensively than in the past, when smaller milling equipments were at work and a lesser tonnage had in consequence to be sent to surface.

The Search for a Stope Drill.

Shortage of native labour has further increased the necessity for supplanting hammer boys by machine drills wherever practicable. One of the great endeavours of the mining industry of recent years has been to obtain an efficient and economical stoping drill. The history of the development of the small machine on the Witwatersrand has been recorded at length in the pages of this journal. It would be folly to pretend that perfection or finality has been secured, but there can be no denial of the fact that a very great deal more of the economics of machine stoping is known to-day than was contained in the philosophies of Main Reef mine managers a year or two ago. Moreover, machine drills are now accounting for an increasing percentage of the ore milled, and the policy of breaking ore in stopes by machines is not now attended with such serious disadvantages in the breaking of abnormally large widths of reef as obtained a few years ago. In a recent issue of the *S.A. Mining Journal* we dealt with a new system of drilling in stopes which was being practised at the Jupiter mine, where the results secured were so satisfactory that it was queried with some justification, " Is a solution of the labour shortage on the mines in sight?" We learn that the Ingersoll " Butterfly " air feed hammer drill continues to do good work on that property, and the method of stoping adopted there is said to be showing such good results that many mining men entertain a high opinion of the labour-saving possibilities of the method.

Experiments at the Geldenhuis Deep.

Following on the interesting work that Mr. Henry is conducting at the Jupiter with these hammer drills putting in down holes with hollow steel, we understand that the Geldenhuis Deep have been successful in drilling down holes to a depth of 57 inches with the hammer drill, using solid steel. The trials are in the experimental stage, and fuller particulars will be given later. If the trials prove successful, the disadvantage of using hollow steel will be overcome. As at the Jupiter, Ingersoll " Butterfly " drills are being utilised for this work. So satisfactory have been the results obtained from this drill, using the Henry and Hardach bars, that we understand that one mine on the Central Witwatersrand has about forty of these machines at work. The further progress of hammer drill stoping at the Jupiter and Geldenhuis Deep will be watched with keen interest. We would here also direct attention to the very promising work which is being achieved at the Knights Deep by Flottmann drills and which is referred to elsewhere in this issue.

New Unified.

Number of feet driven, sunk and risen, 1,298.5; ore developed, 30,388 milling tons; crushed, 30,360 tons; total gold recovered, 10,844.226 ozs.; revenue from gold, £46,063; working costs per ton milled, 22.024s.; total working costs, £33,432; working profit per ton milled, 8.321s.; working profit for quarter, £12,631; sundry revenue, £337; accumulated slimes, £1,623, less costs £507; gross profit for quarter, £14,085; capital expenditure, £2,903; net profit, £11,181. The revenue from gold shows an improvement to the extent of 1s. 4d. per ton, which was partly due to rock of higher grade being mined, and was also due to the improved extraction, which has been accomplished as the result of running the tube mill. Working costs, however, were a shilling per ton higher, and the gross profit £200 more than that of the previous quarter. The main incline shaft was sunk 106 feet, to a total depth of 2,521 feet. Reef of satisfactory value has been exposed as a result of the development work carried out during the quarter.

LATEST FROM THE RIVER DIGGINGS.

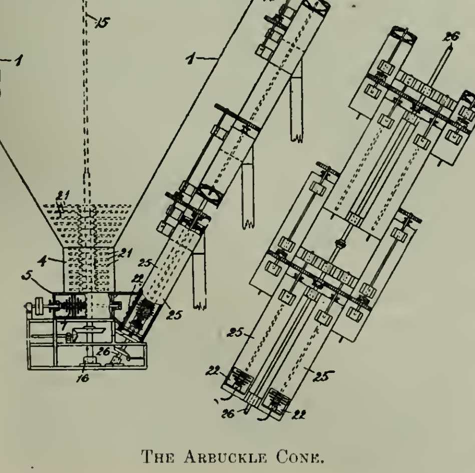
More Farms Thrown Open—December Returns—Mooifontein and Bloemhof Contributions.

Modderkraal was thrown open to pegging last Saturday, and it is reported that the proclamation of Weltevreden will take place on the 8th of February. The size of the camp at the Goedgenoeg diggings is daily increasing, and the diggers now number between seventy and eighty. Very little washing has as yet been done, but a number of finds have been made. The December diamond returns show a total for the various diggings in the south-west of 6,348½ carats, valued at £33,379 2s. 6d., which brings the total output for the year 1911 up to 37,382 carats, valued at £196,777. It only needs to be observed that the total for 1910 was 1,542 carats, valued at £7,411, to show the growth of the operations during the last year. In December, Mooifontein, with 612 returns, was responsible for 4,818¼ carats, valued at £24,498 6s. 6d.; and Bloemhof, with 298 returns, showed 1,281¼ carats, valued at £7,474 6s. The remainder of the output was made up as follows: Weltevreden, three returns, 104 carats, valued at £582; Avondster, one return, 80 carats, valued at £508 5s.; London, one return, 23¾ carats, valued at £143; Bospan, one return, 11½ carats, valued at £82; Modderkraal, two returns, 4¼ carats, valued at £26; Kromellenboog, four returns, 8½ carats, valued at £25 5s.; Christiana, four returns, 12½ carats, valued at £18 10s.; Van Zyl's Drift, one return, 1 carat, valued at £6 10s.; Cawood's Hope, one return, 1¼ carats, valued at £2 10s.; Biesjeslaagte, one return, 1 carat, valued at £1 15s.; and Bushmansfontein, one return, 1 carat, valued at 10s. Supplementary returns for November were made as follows: Mooifontein, 34 returns, 23½ carats, valued at £996 13s. 6d.; Bloemhof, 17 returns, 77½ carats, valued at £436 10s. These additions brought the total for November up to 6,527 carats, valued at £32,065.

THE ARBUCKLE CONE.

Details of the Design Illustrated—Points from the Patent Office Records.

Since a very great deal of interest is being evinced in the Arbuckle Cone, the only part of the Way-Arbuckle plant at Benoni which appears to have given trouble in its adjustment, and since, also, very little seems to be known with regard to the details of its design we give the accompanying drawings and brief description from our contemporary *Metallurgical and Chemical Engineering*, which has collected the material from recent Patent Office records. The screw lift is somewhat modified from the original design, as erected at Benoni, and the effect is evidently to obviate the difficulty of overcoming the friction which must be pretty considerable in a single lift of the height required:—



The Arbuckle Cone.

A device similar in purpose to other thickening machines, but having in combination means for elevating the thickened slime or washed sand to another tank for further treatment, is shown in Figs. 1 and 2. Fig. 1 is a part sectional elevation of the invention, showing a tank and attached elevating means. Fig. 2 is a view of the screw conveyor as seen from above and at right angles to Fig. 1. The invention is that of Alexander J. Arbuckle, of Johannesburg, Transvaal, South Africa. Referring to the figures, 1 represents a settling tank having a lower cylindrical portion 4 connected with a box 5 in which intermittent or continuous helical feed conveyors 7 are placed. By means of opening 22 in the frame between the box 5 and the inclined screw conveyors 25, thickened pulp can pass to the latter for elevation. In the tank 1 is a vertical shaft 15 running in a step bearing 16, with radial arms 21 attached in the form of an intermittent helix or screw thread. In operation these radial arms force the slime or sand downward into the box 5, whence it is driven by the screw 7 into the inclined screw conveyors 25. It will be observed that the screw conveyors are arranged in sections or lifts and that the slime delivered at the top of one section is raised in the next, and so on. One drive shaft 26 serves for the operation of all the screw conveyors, suitable gearing being arranged as shown. The inventor's idea in arranging the inclined conveyor in sections was to avoid the difficulties in driving long screw conveyors, and to provide for intermediate supports in its length. (1,008,513, Nov. 14, 1911.)

Wesselton Diamonds.

The American papers contain advertisements of a firm of diamond merchants booming Wesselton diamonds. The advertisement says:—"The beautiful gems we offer from the famous Wesselton diamond mine are absolutely perfect, which means entirely free from flaws, even when examined under the most powerful magnifying glass. Here are the prices of these diamonds, including a 14-carat solid gold ring:—½-carats, £20; ¾-carat, £25; 1-cart, £50; 1¼-carats, £69; 1½-carats, £82.

THE VENTERSKROON GOLD FIELD.

Another Record of Disappointment—The Free State Rand Discontinues Operations—A Consensus of Unfavourable Opinion.

The news that prospecting operations have ceased on the properties of the Free State Rand, Ltd., adds another venture to the list of undertakings that may, for the moment at any rate, be considered failures, in the Venterskroon Gold Field. The tale is pretty much the same as in previous instances; excellent values have been found, in parts, and promising looking reefs, but the characters of permanence and continuity upon a sufficiently large scale are wanting. It can scarcely be said at this stage that the country around the Vredefort granite boss, on which the Witwatersrand formation is extensively developed, has not as yet had a fair and more or less thorough trial. Years ago, before the war, prospectors fossicked over portions of it very industriously; later on the Orangia Main Reef Company, under the direction of Mr. Draper, continued the investigation; later still, Eckstein and Gold Fields groups spent large sums of money in an enquiry there, and still more recently Dr. Corstorphine took considerable interest in the area, and studied its reefs closely and in detail. Finally, operations in yet another section, under the control of Mr. T. Hallimond, have been carried on over a period of several months. Each in turn has evidently been led to the conclusion that there is nothing to justify the anticipation that a large and payable field, under present-day conditions, only awaits the serious attention of the capitalist and the engineer to tane a leading place in the list of productive goldfields.

Generally Unfavourable Conclusions.

It is not impossible, perhaps, but it is nevertheless extremely improbable, that the seemingly unanimous verdict of almost everyone who has put in really serious work in investigating the field, is an unjustifiable one. It remains, however, for those who hold a different opinion to give equally good reasons for their belief. One point that has been demonstrated, we think, is that there is a limit to the extension of the Main Reef series, and that the limitation occurs in the direction of the Venterskroon area. Another is that the regularity, imperfect as it is, which characterises the various banket horizons along the Rand, is distinctly absent along the Vaal River, where the more or less continuous banket beds, upon which are located the gold mines east and west of Johannesburg, appear to break up into an agglomerate of lenses, which are far from being even approximately uniform in the matter of value, even in the same horizon, and within reasonable working distances.

The Deltaic Deposition Theory.

Quite apart from the question of the origin of the gold in the banket beds is the problem of their origin and method of deposition, and it is not unlikely that in Dr. Mellor's theory of deltaic deposition we have a clue to the physical difference which exists between the auriferous conglomerates of the Rand and those in the south. Greater distance from the source whence the materials now composing the beds were derived may account for the irregularity of the deposition and the absence of well-known series. Until the Geological Survey has had an opportunity of going into these matters, it would be premature to venture upon definite theories, but the theory propounded by Dr. Mellor seems to fit the evidence gathered by engineers and prospectors in the Venterskroon field so very closely that it tends to give additional support to the conclusions come to with regard to the patchiness and irregularity of the area, at the same time that it offers a reasonable explanation for it.

MINERS' PHTHISIS IN CORNWALL.

Dr. J. S. Haldane Describes the Position To-day.

As in previous years, Dr. J. S. Haldane, F.R.S., has analysed the health returns obtained from the sub-registrars of the Redruth registration districts. Dr. Haldane remarks: "Since 1907 there has been a substantial and progressive decrease in the deaths from lung disease; and there seems to be every reason for believing that the regulations introduced in 1905 for the prevention of miners' phthisis are now telling markedly on the very heavy death-rate from this disease. These regulations were more particularly directed towards the prevention of dust inhalation in rock drill work, and special interest attaches to the returns of deaths among men who had worked rock drills in Cornwall only. It will be seen that there were eight deaths (all from phthisis) among men who had worked rock drills in Cornwall only. On examination of the records by the registrars of the work done by these men, it appears that five had only worked rock drills before 1905. Of the other three, one had worked for 15 years with drills—*i.e.*, almost entirely before 1905. In the cases of the other two, the period at which the work was done is not definitely stated, but seems to have been either wholly or partly before 1905. No death can thus be attributed to work with rock drills since 1905. It will also be seen that the average age at death (49) of the men who died was 10 years greater than a few years ago.

"Of the ordinary miners who had not worked rock drills, 23 out of 47 had died from phthisis, and of these 23, 15 had worked abroad, though only three had worked entirely abroad. A considerable part of the heavy death-rate among the ordinary miners must thus be attributed to work abroad, and it is evident that more than half of the deaths (all, without exception, due to phthisis) among the rock drill men were due to work abroad.

"It is to be hoped that the fall in the death-rate from phthisis will act as a further stimulus and encouragement to mine officials and miners to adopt every precaution against the inhalation of dust, in whatever way in may be produced. Apart from the avoidable danger of dust inhalation, metalliferous mining in Cornwall appears to be a perfectly healthy occupation."

In the estimates for the year commencing July 1, 1912, the United States Government have made provision for the following: (1) For the investigation as to the causes of mine explosions; methods of mining, especially in relation to the safety of miners; the appliances best adapted to prevent accidents; the possible improvement of conditions under which mining operations are carried on; the use of explosives and electricity, the prevention of accidents, and other enquiries and technological investigations pertinent to the mining industry, £72,000. (2) For the investigation, analysing, and testing of coals, lignites, and other mineral fuel substances belonging to or for the use of the United States, £27,000. (3) For investigations into the treatment or ores and other mineral substances, with special reference to the prevention of waste in the mining and utilisation of important mineral resources, £20,000. (4) For the investigation of the coals of Alaska, with reference to their mining, transportation and utilisation, £10,000. (5) For the metallurgical investigations with a view to devising a method for the profitable working of low-grade and complex ore deposits, £20,000.

THE RANDFONTEIN CENTRAL.

A Disappointment About Surplus Profits—A Promise of a Better Year and a Satisfactory Dividend—Generally Gratifying Prospects for 1912.

The published reports of the Chairman's speech at the Randfontein Estates meeting and the statement of accounts, following upon the passing of the anticipated dividend and the recent explanatory circular of the board, have seemed to increase the feeling of depression which has prevailed amongst shareholders with regard to the outlook of the company. The somewhat sanguine remarks of Mr. J. W. S. Langerman at the annual meeting last year are being quoted in contrast with his *apologia* of to-day, and the impression seems to be that the East Rand Proprietary Mines' affair in the Far East is to have its counterpart in some kind of way on the extreme west. There is a feeling, in spite of the explicit statements from the chair at the last meeting, that the whole position has not been fully disclosed, and that something is being judiciously held back until the shareholders have had time enough to recover from the effects of recent announcements. On a careful perusal of the speech and accounts, we find ourselves unable to share in this feeling.

The chief grievance of shareholders, apart from the fact that no dividend has been announced, is that a clear exposition of the financial position of things was not made last year when proposals relating to the amalgamation of the Central and South Randfontein areas was under discussion. At the Randfontein Estates meeting on February 6th, 1911, Mr. Langerman said: "I now come to the position and prospects of the Randfontein Central Company. . . . . The plant is now practically complete and in first-class running order, and I have the pleasure to announce that crushing operations will be commenced in a few days with 300 stamps. . . . . . The completion of the Randfontein Central's plant marks the stage at which the subsidiary companies will no longer require financial assistance from the Randfontein Estates, and we shall, therefore, from now onwards, be able to devote our profits to the payment of dividends." According to the recent circular the equipment and development of the Randfontein Central was completed last year at a cost of £1,900,000. In the year 1909 the directors of the Randfontein Estates made issue of £2,000,000 debentures for the purpose of meeting this expenditure. After the amalgamation of the Central and South, the equipment of the Stubbs section was proceeded with and completed at a cost of £177,000. The total cost of all this work at Randfontein was, therefore, £2,077,000. Leaving out this latter amount, it is clear that a sum of £2,000,000 would easily have covered the Central capital expenditure, but it now transpires that out of the debenture issue only £1,420,000 was really available in the end for the purposes for which the issue was intended.

The Funds Provided.

In his speech at the meeting of the Randfontein Estates on March 29th, 1909, Mr. Langerman, who presided, referred to the intention of the board to incorporate various subsidiary companies into the one which afterwards became the Central, and explained that the estimated capital expenditure required for the completion of this gigantic undertaking was about £1,800,000, "and I am happy to say that the funds needed for the purpose have been acquired." This sum, it was stated at a meeting of the Central shareholders on the same date, would be furnished by the Randfontein Estates upon very favourable terms, namely, interest at the rate of 6 per cent. per annum, and repayment by annual instalments commencing March 1st, 1914, and ending March 1st, 1933. The funds raised by the debenture issue were expended as follows:—

Loan repaid to Sir J. B. Robinson ...	£193,000
Amalgamation expenses	44,000
Debenture issue expenses	174,000
Debenture interest	169,000
	£580,000
Balance to equipment, etc.	1,420,000
Total	£2,000,000

As shown above, the expenditure, including the Stubbs equipment, incurred since amalgamation, has amounted to £2,077,000, leaving a surplus to be met, over and above the debenture receipts, of £657,000. It is rather unfortunate that this additional sum, which must have been foreseen, approximately, last year, was not at least hinted at when the Randfontein Estates shareholders were beginning to rub their hands together at the prospect of an early dividend.

A Sound Policy.

It was explained by Mr. Langerman at the annual meeting the other day that the directors hoped to be able to liquidate this deficit by the sale of portion of the 500,000 reserve shares created for the purpose under the scheme of amalgamation, so that current profits of the year might be available for dividends. "Unfortunately the depressed condition of the share-market rendered it impossible to realise the shares excepting at a price far below their intrinsic value," he added, "and the directors had therefore no alternative but to apply the profits of the year to meet the over expenditure on capital account, and thus forego the declaration of a dividend." No one will deny the soundness of a policy of this kind, and we are not aware that the shareholders have objected to it. The disappointment arises from the fact that the deficit has been sprung upon them, so to say, when they had every reason to believe that they were about to hear something much more cheerful. The disadvantages of a policy of discreet silence have been only too obvious in the case of the East Rand Proprietary Mines, and the example afforded by the Randfontein Estates board in the same direction has tended to emphasise the feeling of doubt with regard to the *bona-fides* of Rand directors which has found very abundant expression abroad for some time past. After the publication of the circular in the beginning of January the question that very naturally followed in the financial Press in London was "How are we now to appreciate a repetition of optimistic forecasts in regard to the future?" and "What additional expenditure will be necessary?" Upon these points the following definite statements of Mr. Langerman should be conclusive and satisfactory:—

Future Dividends.

"In view of the fact that the equipment of the Central Division is completed and the electrification of the Southern Division and equipment of the Stubbs section nearing completion, together with the improved prospects of the company as the result of an assured sufficiency of native labour, I have no hesitation in promising you that it and this company will be able to declare dividends at the end of the current year." It was further remarked by him that the Central started the year practically free of debt.

On the basis of last year's profits the position at the end of 1912 would be roughly:—

Profits of 1912		£860,000
Debenture redemption	£97,500	
5% on £735,000 Debentures ...	36,750	
6% on £2,000,000 Debentures .	120,000 say	
		260,000
		£600,000
Less Profits Tax		70,000
		£530,000

or about 13 per cent. on the Central issued capital of £4,000,000. We are given to understand that there is a prospect of things going very much better with the Central this year, and, if so, Mr. Langerman's assurance of a satisfactory dividend, it will be evident, may be accepted with some amount of confidence. Roughly speaking, only about two-thirds of the crushing capacity of the whole Central plant could be utilised last year, so that with full mills going the profit, on last year's figures, should be round about £1,200,000 at least. Assuming favourable conditions, then, the future of the Central appears distinctly promising.

According to the annual report, the payable ore reserves amount to 5.658.859 tons, valued at 7·29 dwts., as against 5,534,303 tons, valued at 7·54 dwts. There has been a slight increase in tonnage, therefore, and a small diminution in values. Development on the New and East reefs during the year has given gratifying results, and much is expected from them in the future. The question of development, however, still remains an extremely important one, and it is in regard to this matter, as we indicated some time back, that the progress of the company will be most closely watched. It is greatly to be hoped that sufficient native labour will be obtained to carry out as fully as possible this part of the company's programme; for, as we pointed out in the article referred to, it is essential that advance development on a large scale should be carried out in order to off-set the comparatively large proportion of dead work that falls to be done in the Central section of the property.

GEOLOGICAL RESEARCH ON THE RAND.

Annual Speech by the President of the Geological Society.

THE annual meeting of the Geological Society of South Africa was held in the Council Chamber, Witwatersrand Chamber of Mines, last Monday. Mr. E. T. Mellor, D.Sc., presided.

The presidential address was entitled "Some Aspects of Geological Work in South Africa." There were in South Africa vast stretches of country the geological structure of which was almost instantly apparent to the expert. Many a serious error in geology in South Africa was the outcome of a too confident interpretation of long range observation. Many geological problems awaited solution upon the Rand. Where gold existed geological features had to be treated in a minute manner, which was out of all proportion to the purely geological standpoint. To a large extent the geologist could carry out his work unhampered by the presence of a large population. There was a good field for geological research in Johannesburg and its subsidiary townships. To pursue geological research within a municipal area sometimes led to a trespass in a private garden, or to search in a gutter for an outcrop. Well, there were few cities in the world where one could gaze into a gutter for 15 minutes without attracting a crowd—(laughter)—but it could often be done in Johannesburg without attracting attention. Proceeding, the President said that he was glad that more attention was being paid to the work of sampling. If really reliable results were to be obtained sampling had got to be conducted with great ability and skill. No area in the world possessed so many or so deep boreholes as the Witwatersrand, and the Witwatersrand also possessed its share of optimists and pessimists. The latter were frequently referring to the impending exhaustion of the mines. Many mining ventures had been left behind conspicuous souvenirs of former activity. But, to his mind, the life of the mines seemed capable of great prolongation, and that the Witwatersrand would not present such an unpleasant sight as the pessimist appeared to think. The Witwatersrand offered an exceptionally fine field for geological students to study, within a comparatively small area, one of the biggest and most prosperous mining fields in the world. In conclusion, the President referred to the paucity of contributions to the scientific records. Some said that the people in authority in some of the largest mining and technical enterprises were opposed to research, or, at any rate, were not inclined to offer assistance in that direction. He did not think that such a statement, if true, could account for anything more than a small portion of the paucity. Mining offered great opportunities for geological research, and he hoped that members of the Society would not fail to contribute papers upon geological subjects. (Applause.)

Mr. R. N. Kotze (Government Mining Engineer) also spoke. He complimented Dr. Mellor upon his presidential address and upon his work for the past year, which, said Mr. Kotze, would probably save considerable money from being wasted. The Government, when it knew of the work that the Society had done would not be lacking in appreciation. And if, in a desire for better economy of national funds the Government threatened to withhold its grant to the Society, he would always be glad to put in a good word for the Society, and would try to obtain assistance for the Society. (Applause.)

The accounts showed a credit balance of £192 8s. 11d., and together with the report, they were adopted.

The following officials were elected for the current year:—President, Mr. H. S. Harger; vice-presidents, Dr. Mellor, Dr. A. W. Rogers (Capetown), and Mr. G. G. Holmes; hon. secretary and treasurer, Dr. Geo. S. Corstophine; council, Messrs. A. von Dessauer, A. L. Hall, H. S. Harger, G. G. Holmes, H. Knyaston, J. G. Lawn, H. B. Maufe, E. T. Mellor, E. H. V. Melvill, A. W. Rogers, G. R. Thompson, P. A. Wagner and R. B. Young.

At the instance of Prof. Lawn, Dr. Mellor was accorded a hearty vote of thanks for the manner in which he had occupied the presidential chair. Dr. Corstorphine was also accorded a vote of thanks.

Rand Collieries.

The directors of the Rand Collieries report that during the December quarter the development footage included 1,533½ feet driven, 150½ feet risen, and 80 feet sunk; total, 1.764 feet. Cross-cuts, ore bins, or passes, etc., added another 142 feet.

Roodepoort United.

At the Roodepoort United Main Reef during the December quarter 3,546 feet were driven, sunk and risen; 86,957 tons were crushed; 23,508 ounces, or 5·407 dwts. per ton, were recovered; revenue from gold was £99,823, or 22s. 11·511d. per ton; working costs were £76,420, or 17s. 6·919d. per ton; working profit was £23,823, or 5s. 4.592d. per ton; capital expenditure was £9,550; £1,949 was charged to working costs in excess of actual expenditure on mine development. Working profit shows an advance of £2,657 on that for the previous quarter.

West Rand Consolidated.

Last quarter's results at the West Rand Consolidated included 3,925 feet driven, sunk and risen; 86,950 tons milled; 23,610 ounces, or 5·431 dwts. per ton, recovered; £100,111 revenue from gold, equal to 23s. 0·327d. per ton; working costs, £83,607, or 19s. 2·774d. per ton; working profit, £16,503, or 3s. 9·552d. per ton; capital expenditure, £11,308. The working profit exceeded that of the September quarter by £6,357.

New Goch.

The principal features of the report of the directors of the New Goch for the December quarter were 1,338 feet risen, driven and sunk; 90,660 tons milled; 23,604 ounces, or 5·207 dwts. per ton, recovered, equal to £99,929, or 22s. 0·537d. per ton; working costs, £74,217, or 16s. 4·471d. per ton; working profit, £25,712, or 5s. 8·066d. per ton; capital expenditure, £1,145. The working profit exceeded that for the September quarter by £1,273.

Mines of the Witwatersrand.

VIII.—THE KNIGHTS DEEP, LTD.

Labour Shortage and Small Drills—Low Working Costs—Financial Position and General Outlook.

The Knights Deep with working costs at 10s. 9d. per ton records a lower rate of operating expenditure than any other proposition on the Witwatersrand. Because of its low grade nature it is absolutely imperative that working expenses should prevail at a very low rate. When the company commenced milling a grade of over 30s. per ton was obtained, the recovery during the second year of the company's productive existence—year ended July 31, 1905—being 32s. 3d. per ton. Expenses during that period came to 27s. 10d. per ton. Year by year the recovery per ton has fallen and with a view to at least maintaining profits the management has exerted every endeavour to increase the tonnage milled and reduce working expenditure. Of course large tonnages of ore have become of profitable value in consequence of this policy, and it is obvious from the ore reserves and the general underground position that the company will be able to maintain the grade of ore it is at present working.

Knights Deep, Ltd.: View Looking Towards Connor Shaft.

Some Important Statistics.

The history of this mine and its outstanding characteristics are so clearly defined by the records of the various years' work that we here reproduce the salient features of the eight annual reports of the company. These are supp'emented by the last quarterly and monthly statements.

Large Tonnage Imperative.

We have, on certain occasions, disputed the wisdom of the big mill policy, and the strenuous endeavours for a maximum of ore crushed, and a minimum of money expended, contending that such methods are not often consistent with a maximum of profit. But each mine must be considered on its own individual peculiarities, and in the case of the Knights Deep it is clear that a low rate of cost and therefore a large basis of production are absolutely necessary. An examination of the assay plan of the mine shows that very few of the stopes are of over 6 or 7 dwts. value, in fact the normal recovery of the mine to-day is but little over 4 dwts. per ton. To-day the Knights Deep is essentially a low grade venture, with large stopes, and very busy shafts and the lowest rate of expenditure on the Witwatersrand Gold Fields. To instance the size of some of the workings reference may be made to the bottom stope in the mine, which is probably the largest on the Witwatersrand, 24 machines being at work there, and the reef assaying about 6 dwts. per ton on a milling width of 7 feet. Tonnage, as already stated, is a great consideration in the case of a mine like the Knights Deep. About 75 per cent. of the ore sent to surface through the Robertson and Connor shafts

			Stamps.	Tons Milled.	Sorting Per Cent.	Revenue. Amount. £	Revenue. Per Ton.	Expenses. Amount. £	Expenses. Per Ton.	Profit. Amount. £	Profit. Per Ton
Year to July 31,	1904	...	av. 100	178,903	—	275,223	30/9	266,047	29/9	9,176	1/0
Year to July 31,	1905	...	av. 125	242,950	18·9	391,808	32/3	337,812	27/10	53,966	4/5
Year to July 31,	1906	...	av. 110	270,569	21·4	401,422	29/8	324,439	24/0	76,983	5/8
Year to July 31,	1907	...	av. 158	385,047	19¼	557,815	29/0	400,481	20/10	157,334	8/2
Year to July 31,	1908	...	av. 200	504,890	10¼	680,561	26/11	425,979	16/10	254,582	10/1
Year to July 31,	1909	...	av. 255	593,990	10½	710,372	23/11	429,066	14/5	281,306	9/6
Year to July 31,	1910	...	av. 270	650,820	9¼	684,334	21/0	399,030	12/3	285,304	8/9
Year to July 31,	1911	...	av. 268¼	695,670	5½	682,997	19/7	398,692	11/5	284,305	8/2
Quarter ending Oct.	1911	...	av. 270	188,320	—	167,430	17/9	102,291	10/10	65,139	6/11
Month ending Nov.	1911	...	av. 270	62,600	5·68	55,029	17/7	33,578	10/6	21,451	6/10
Month ending Dec.	1911	...	av. 270	61,950	6·07	51,320	17/6	34,071	10/9	20,249	6/6

to-day is derived from machines, and 25 per cent. by reclamation. Underground, large pig-styes and waste packs are built. The mining expenses as disclosed in the last quarterly report were at the rate of 5s. 11.34d. per ton, and pumping costs at slightly over 2d. per ton—the water pumped by the Company has decreased greatly of recent years, the amount dealt with during the quarter ending October 31st last being under 9 million gallons.

THE LABOUR PROBLEM.

Considering the facts that the Company possesses compound shafts, and is to-day very short of native labour, the rate of underground expenditure is remarkably and creditably low. The requisite labour complement of the mines is about 3,200 boys, but only 2,500 are now employed. Naturally a shortage of labour makes for a decrease in ore mined and sent to surface, and whereas the normal monthly tonnage of the Company is in the neighbourhood of 65,000, this has been reduced to 58,500 by reason of labour scarcity. With a view to bettering matters in this respect Ingersoll Jack-Hammer Drills have been employed underground, and lately Flottmann drills have been got to work in the mine. From the use of these very good results have been secured and great hopes are entertained that the labour troubles, not only of the Knights Deep, but of the Rand in general will be greatly minimised by the extended employment of drills of the Flottmann type. In a Main Reef stope on the thirteenth level two Flottmann drills are working, one being a 32 lbs. machine, and the other a Baby drill, weighing but 17 lbs. Despite temporary trouble with steel both drills are doing excellent work. The large machine is supported by a horizontal bar which is driven into a 3 or 4 inch hole, put in by the baby machine before commencing drilling operations proper. The baby machine is easily operated by a single native without any bar support whatever. The drill strikes about 2,000 blows per minute, and the rate of drilling at the Knights Deep appears to be slightly over one inch per minute, including the changing of bits, etc. It is estimated that five or six 3ft. holes can be drilled per native per shift with these machines, and it is unnecessary to point out that if such anticipations are realised on a large scale of working this new development of underground drilling work will be of the very first rate importance, not only to the Knights Deep, but to the industry at large.

KNIGHTS DEEP, LTD.: THE ROBERTSON SHAFT.

The Knights Deep and Simmer and Jack East are adjacent mines, are under joint management, and since 1908 the Knights Deep Company has operated 70 of the Simmer East stamps.

LIFE AND ORE RESERVES.

The Knights Deep "life," although no claim is advanced for anything but a very approximate estimate, may be calculated at about fifteen years from this date. The ore developed in the mine at the end of July, 1911, was estimated at some 1,650,000 payable tons of fully developed milling ore of an average assay value of 5·2 dwts., and in addition there were some 57,000 tons of partially developed ore of an estimated value of 4·55 dwts. Exclusive of this reserve tonnage, there were large areas in which sufficient work had been done to admit of the ground being attacked by stoping, but which had not been included in the reserve owing to the absence of reliable information as regards value. No account was taken in this estimate of the tonnage likely to be milled from the Bastard Reef, as this ore body has proved to be too changeable in value to permit of an estimation, although little doubt exists that a considerable tonnage from this reef will be mined at a profit. In writing of the Bastard Reef in his last annual report, Mr. C. D. Leslie, the superintending engineer, remarked:—"This reef, which was mined cheaply and with considerable success during the past year, would with reduced working costs become a more valuable source of ore supply by means of which the profitable life of the mine would be materially extended." In connection with these facts and figures it is important to note that operating costs are to-day ruling at approximately one shilling less than the average for last year. The ore reserves stand to-day substantially higher than they did at the end of July last.

FINANCE AND GENERAL PROSPECTS.

The last accounts submitted to shareholders at the annual meeting held on October 27, 1911, showed a balance brought forward of £83,432. Since the end of July last and up to the end of 1911 a working profit of £106,839 has been earned. In December last a dividend of 15 per cent., absorbing £96,529, was declared. The outlook for the property may be regarded as favourable, always provided that working costs are kept at their present low level. Any element of labour uncertainty which may tend to increase working costs cannot fail to react on this concern in a more marked degree than the great majority of other Witwatersrand mines. Bearing this in mind, the importance of the promising results secured by the use of small drills in the mine can scarcely be over-estimated.

KNIGHTS DEEP, LTD.: PORTION OF REDUCTION PLANT: TAILINGS DUMP IN DISTANCE.

THE YEAR WITH PREMIER DIAMONDS.

Profits £531,276—Effect of Values on the Position—A Million Less Loads Washed.

A profit of £531,276 is disclosed by the report of the directors of the Premier Diamond Company for the year ended October 31, 1911. Besides this, the stock of diamonds on hand when the year closed was valued at £311,346, and "Unrealised special accounts" accounted for £13,396. Practically the whole of the balance (£297,950) was realised during November and December at an advance on stock prices. During the company's year £100,000 (250 per cent.) was paid out as dividends on preferent shares, and £80,000 (200 per cent.) on the deferred shares. Since then a further 300 per cent. (£120,000) has been declared payable on the deferred shares, which makes the amount distributed during the calendar year a record in the company's history, it being 500 per cent., as against the previous best of 400 per cent.

Stones Recovered.

The ground washed during the year totalled 8,325,000 loads, or over a million loads less than the amount washed in the previous twelve months. The drop is attributed to continued scarcity of native labour, and "the directors regret exceedingly that, despite all their efforts, they have not succeeded in bringing the labour force anywhere near the capacity of the mine and equipment." Fortunately the value per load increased sufficiently, not only to counteract the slightly higher cost, but also to enable the company to reach nearly the same aggregate profit as in the previous year, despite the smaller quantity of ground treated. The reduction, however, naturally added to the cost per load and diminished the total profits. The recovery per load equalled 3s. 5·3d., as against 3s. 2·5d. in the previous year, so that the shortfall in profits was only about £10,000. It should be pointed out, however, that the weight recovered per load was less than in the previous year, being 0·213 carat, as against 0·230 carat per load.

Rise in Market Value.

The increased value per load was therefore due to the fact that "the average value of the diamonds has improved as compared with the previous year to the extent of fully 15 per cent., and in this connection the board is able to state that the production for the last quarter averaged per carat considerably above the mean for the year. It is equally satisfactory to point out that the improvement is due in about equal shares to better quality and rising markets. The company's representative in London, Mr. W. Busch, reports that during the whole year the demand for Premier goods greatly exceeded the supply. Mr. Busch also draws attention to the increasing demand from countries formerly not important buyers of diamonds, and he considers that the outlook for the coming year continues to be very favourable."

The Manager's Report.

The general manager's report shows that the average number of loads hauled per day of 24 hours was 29,055; the average cost per load mined and washed was 2s. 0·99d.; the average cost per carat won was 9s. 9·29d., and the yield of diamonds was 1,774,206 carats, a decrease of 371,627 carats as compared with the previous year. Referring to the decrease in the number of loads washed, the general manager says that, besides the shortage of labour, operations were retarded at intervals during the rainy season, and in addition work was entirely suspended for two shifts during May owing to exceptionally cold rains. It is further stated that some 740,022 loads of floating reef were hauled from the mine. This amount roughly equals a month's work, and exceeds the quantity dealt with during any previous year of the company's history. It was necessary to push this work vigorously in order to obviate interference with development operations, as well as to ensure safe working. This work was mainly confined to the removal of the southern portion of the bar, and the quantity of rock remaining in this section is approximately 750,000 loads.

The Cost of Labour.

Recruiting costs compared most disadvantageously with those of the previous year. Payments to recruiting agents amounted to £40,836 for 12,169 natives forwarded, the amount per head equalling 67s. In the previous year the payments to agents amounted to £22,569 for 13,017 natives forwarded, the amount per head being 34s. 10d. Thus within twelve months recruiting costs, measured by results, have practically doubled. Voluntary natives numbered 2,856 last year. Native wages totalled £406,418, or 2s. 8·696d. per native per day. (Premier natives find their own food.) White employees averaged 729, and received £209,123 in wages.

The Record of the Company.

An interesting summary of the company's revenue and expenditure from its inception is included in the directors' report. It shows that the working capital originally subscribed was £10,000; £74,250 was raised by the issue of 3,000 reserve shares of £1 each; sundry revenue, including the company's 40 per cent. share of the Cullinan Diamond, amounted to £325,771; the profit on expenditure and revenue account, after deducting the loss on the contract with the Diamond Syndicate, aggregated £5,131,954; the total sum to be accounted for being £5,541,975.

The summary of its distribution is as follows:—Transfer fees on property, £707; equipment, £1,646,665; Government share of profits, excluding its 60 per cent. interest in the Cullinan Diamond, £1,675,785; dividends, £1,420,000; trading fund, £300,000; emergency fund, £100,000; diamonds on hand, £311,347; balance carried forward, £87,471. In brief, the net results attained by the company are the payments of £1,676,000 to the Government, of £1,420,000 to shareholders, besides the accumulation of trading and emergency funds totalling £400,000, and the expenditure of £1,647,000 on equipment. In connection with the last item, it is interesting to note that the balance sheet takes property into account at £67,707 10s., and equipment at £12,292 10s., the total being £80,000, equal to the nominal capital of the company.

Cinderella Consolidated.

During the December quarter at the Cinderella Consolidated 3,015 feet were driven, risen and sunk; 46,478 tons were crushed; 15,246 ounces of gold, or 6·561 dwts. per ton, were recovered; revenue from gold was £64,901, or 27s. 11·154d. per ton; working costs were £56,722, or 24s. 4·916d. per ton; working profit was £8,179, or 3s. 6·238d. per ton; capital expenditure was £36,969. The working profit shows an increase of £739 13s. 3d. over that for the previous quarter. 376 feet were sunk in the central shaft, making a total depth of 1,582 feet. Connection with the Cason shaft has been established, thus securing a second outlet. It is anticipated that the restrictions placed upon the mine by the Government will be removed within the next few weeks.

Glencairn.

The Glencairn Mine made a net profit of £7,715 during the December quarter. There was an increase in the quantity of ore crushed, and as a further slight reduction was effected in the working costs per ton milled, the gross profit showed an improvement of £987 as compared with that for the previous quarter. The additional plant for treatment of slimes accumulations was put into use during the quarter, and it has been found possible to considerably increase the quantity of slimes treated. Certain rich slime from the old Glencairn section of the mine has been exhausted, so that the advantage gained by the increased capacity of the slimes plant will not be proportional to the capacity. Still it is hoped that the profit from this source will be somewhat increased, and in any case the profit could not have been maintained without the increased capacity.

ANCIENT MINE WORKINGS IN THE TRANSVAAL.—II.

The Dawn of South African Mining—Some Gold, Tin and Iron Workings Described.

[By T. G. Trevor.*]

Description of Particular Workings.—In grouping the ancient workings for descriptive purposes it will probably be better to classify them according to the metal worked so that some idea of the output of that metal may be formed.

Gold Workings.—The only undoubted workings for gold, observed by the writer, are at Honingkloof No. 112, in Mapochs Gronden and at Weltevreden No. 215, near Waterval Onder.

At Honingkloof the outcrop of a quartz reef had been taken out for several hundred yards in one continuous trench; the trench had been filled in again so that it only appeared as a hollow a few feet deep. When this was opened it was found, however, that the workings extended for more than 50 feet downwards. The reef proved to be one of white quartz showing visible gold in places, but an attempt to run a five stamp mill on it failed, as the values were too erratic. It is probable, however, that the outcrop worked by the ancients was much richer as some small but very rich fragments of float were found in the neighbourhood. From this working one might fairly presume that some two to three thousand tons of gold-bearing quartz had been removed.

At Weltevreden No. 215, sections of an outcrop of a huge vertical reef have been trenched out. In the quartz rubble under the grass roots alongside these trenches there are quite good values in gold, both free and entangled in quartz, but in the actual reef the writer failed to find even a colour. The trenches extend for about 1,000 yards along the outcrop and they have been filled to within a couple of feet of the surface. Some twenty years ago an attempt was made to work the property and the old workings were found to extend to some 40ft. in depth, but the gold worked must have petered out at that depth for the reef, where left by the ancients, was either entirely barren or extremely poor. Some recent prospecting has also been done but though gold values have been found in the rubble nothing of importance was struck in the reef.

Complex Gold Ores.—In the North Middelburg District in the area enclosed by the Kruis River, Selons River, Oliphants River and Bloed River there are a very large number of ancient reef workings where reefs seem to have been worked out in long underhand stopes. These are, however, filled in to within a few feet of the surface. Fragments of ore which the writer has obtained from the dumps are in all cases complex—containing copper, zinc, lead, gold, etc. Personally, the writer has never had an opportuinty of seeing any of these workings opened, but a Mr. Pullen states that in one case he sank 70ft. in "made ground" without getting to the bottom. So far as the writer knows none of these workings have yet been properly opened.

At Elandsfontein No. 167, north of Pilgrim's Rest, there are some considerable ancient workings on a reef carrying both gold and copper, but the writer's recollection of these is not sufficiently clear to warrant a description.

At Wagon Drift No. 765, on Koedoes River, in the Zoutpansberg District, is a very considerable single working on a reef carrying some 5 per cent. copper and a few dwts. of free gold. The reef dips at a low angle, say 20 degrees. For some 200 yards along the outcrop this reef has been completely quarried out to a vertical depth of some 50ft., the overburden having been thrown back in rough layers of fines and lumps, a prospecting shaft sank through it having the appearance of passing through stratified material. Below the depth to which this deposit has been opencasted irregular drives and headings have been carried in for many feet, but on the surface there is no indication of this, the surface appearance of the workings being merely an area of slight depression some one or two acres in extent carrying a different vegetation to the surrounding country. No dumps or slag heaps of any sort are known in the neighbourhood though several thousand tons of ore must have been taken out of the workings.

Copper Workings.—Copper workings exist from one end of the Northern Transvaal to the other, in fact wherever copper is found, with the one exception of the Motali Copper Fields, it seems to have been worked either by the ancients or by the modern Bantu. The chief workings are, however, in the Messina and Palabora areas of the Zoutpansberg.

Messina.—In this area there are at least five or six very large groups of ancient workings. That at the Messina Mine which has been so successfully opened is, the writer thinks, the largest, but the others are not very much smaller. The workings here are all filled up to within a few feet of the surface and show as lines of cup-like hollows of all sizes and shapes extending irregularly for about a mile in length and often in three parallel lines. In the aggregate there are some 120 of these holes, and development has gone to indicate that each one was on a lense of glance or bornite. One of the main holes has been emptied of the debris that filled it, and it now shows as a chamber some 80ft. deep by 50ft. in length and up to 30ft. in width. The bottom of this chamber was still in solid unworked glance. Judging by the size of the chamber and the experience gained of these lenses in other parts of the mine this excavation alone must have given its workers well over one thousand tons of copper, and possibly very much more. It is, of course, quite impossible to estimate the amount of copper the ancient workings at the Messina Mine must have produced, but it certainly could not have been less than several thousand tons, and if the other workings in the locality yielded proportionately, then the total output from the ancient workings in the whole vicinity must have mounted well into the tens of thousands of tons. That quantities of this magnitude could have been used by the local natives for their petty needs, even in many generations, is unthinkable, although we forget the dozens of small copper mines all over the country which must have produced ample for their requirements. That the natives actually did smelt copper here in small quantities is an historical fact and some of their ingots are still in existence. These ingots are shaped like a miniature top hat with the crown decorated with nipples and weigh about 2½ lbs. This shaped ingot is peculiar to the Baquena tribes and was the shape in general use in the Transvaal. The ingots smelted at Palabora by the Bapidi are of the same weight but entirely different in shape, being rods about 2 ft. long with a knob like a flattened pipe bowl on the one end, the rod leaving the bowl at the bottom as a tobacco pipe stem does. The knob or bowl is in this case decorated with two or more nipples. These nipples are, however, in the writer's opinion, merely varieties of breast mark placed on so many articles of native workmanship to indicate fertility.

Palabora.—The name Palabora is used for the general locality lying to the north of the junction of the Selati and Oliphants Rivers. There are many ancient workings in this locality, but the chief of them lie on and around a small hill known as "Lulu." These workings have never been re-opened (June, 1911), and with the exception of one or two abortive prospecting shafts they are as they were when first discovered by white men. The workings cover many acres, some of which have been as completely turned over as the ground of any abandoned alluvial gold field.

For the purposes of description it is useful to divide the workings here into three areas:—

"*A.*" *Western Portion.*—This consists of the western slope and summit of "Lulu," which is covered with one mass of pot hole excavations with debris heaps between them. So close together are these excavations that the whole appears like an old alluvial gold field where all the ground has been turned over. The debris heaps are covered with grass and have worked down into smooth hummocks, no rock and few stones being visible. If these workings were alone it would be difficult to tell what they were worked for or what rock they were in, so much has everything weathered down.

"*B.*" *Central Portion.*—This is immediately to the east of the western portion and covers most of the top, south and east sides of the hill. This is also covered by one net work of pot hole workings, some of very large size—some of the smaller are still open for a few feet below the surface and the country rock is exposed and the debris heaps, though overgrown with bush, are still undecomposed stone. Some of the larger pot holes must have represented very considerable open-casts as they are still 40 ft. or 50 ft. deep and a 100ft. or more in diameter.

"*C.*"—The third area consists of an entirely dissimilar series of workings on the flat at or along the east foot of "Lulu." Here we have a series of reef workings in which the reef has been stoped out neatly and in a most workmanlike manner, neat pillars having been left to support the sides. Such thick bush covers the whole area that it is almost impossible to form a general idea of the workings, but they appear to extend for quite one mile along three parallel reefs. There are practically no dumps at the side of these reef workings, and though one can still get down some 30 ft. or 40 ft. into the stopes it is obvious that they were very much deeper but have been filled in. No copper ore and very few malachite stains can be found in any of the dumps or workings, and samples taken out of the pillars that remain *in situ* show very little copper. The assay of certain samples which the writer took from the pillars gave only 2 per cent. copper. The reef material is, however, completely oxidised, and if the workings are really of very great age, contemporaneous in fact with the gold workings of Rhodesia, as the author thinks probable, it may well be that the copper has been leached out of the ore. Until the bush has been cleared from the whole of the Lulu Kop workings it will be very difficult to form a true idea of their magnitude, but the writer believes that in the aggregate, as in the individual workings, they are far larger than those at Messina. At many other places in the Low Country there are large groups of ancient workings quite comparable with those at Messina, but so far none of these have been satisfactorily opened. If, however, only 1 per cent. of copper was extracted from the amount of ground shifted, then many thousands of tons of metal must have been obtained.

Iron Workings.—Modern native workings for smelting iron ores and for pigments are all well known to living natives and are easily distinguishable. There is, however, another class of workings which are frequently of enormous size and easily discernable from the modern Bantu excavtaions. These have apparently been made either for micaceous iron ore of a specially flaky quality or for red haematite, not necessarily very rich in metallic iron but worked apparently for its value as a pigment. Both these materials are used and have been worked to a certain extent by natives, but the present natives have usually no knowledge of these larger workings, and the style in which they are executed is not that of the modern Bantu.

(To be continued.)

---

*From a Paper read before the C.M. and M. Society.

PRESENT POSITION OF THE NEW RAND.

Results of No. 15 Borehole—No. 16 Started—Dr. Mellor's Views Quoted—Mr. A. R. Sawyer on the Prospects To-day.

In a report, issued this week, Mr. A. R. Sawyer, Consulting Engineer to the New Rand, Ltd., writes, *inter alia*:— "I expressed the opinion in my last report, dated the 29th September, 1911, that No. 15 borehole, which was started on the 25th September, 1911, should intersect the reefs. It has only done so in part, the distance of 4,216 feet on true dip, between Nos. 14 and 15 boreholes being, as explained further on, insufficient. I arrived at No. 15 borehole on the 9th inst., and stopped further boring at a depth of 2,083 ft. 3 in. on the 10th inst.

"*No. 14 Borehole.*—This borehole was started on the 10th June, 1911, and completed on the 2nd September, 1911, at a depth of 1,371 ft. 9 in. It therefore took 85 days, or 73 working days, to reach this depth, the rate of boring was thus 18·8 ft. per working day. The diameter of this borehole is:—From surface to 10 ft., $4\frac{3}{4}$ in.; 10 ft. to 40 ft., $3\frac{3}{4}$ in.; 40 ft. to 193 ft., $2\frac{3}{4}$ in.; 193 ft. to 1,371 ft. 9 in., $2\frac{1}{8}$ in. The diameter of the core from 193 ft. to the bottom is $1\frac{3}{8}$ in. The site of this borehole is 10·25 ft. below datum line.

"*No. 15 Borehole.*—This borehole has taken 108 days, or 90 working days, to reach a depth of 2,083 ft. 3 in. The rate of boring has consequently been a little over 23 ft. per working day, a very creditable achievement considering the depth and the fact that practically 100 per cent. of core was recovered. The diameter of the borehole is:—From surface to 40 ft., $4\frac{3}{4}$ in.; 40 ft. to 101 ft., $3\frac{3}{4}$ in.; 101 ft. to 202 ft., $2\frac{3}{4}$ in.; 202 ft. to 2,083 ft. 3 in., $2\frac{1}{8}$ in. The diameter of the core from 202 ft. to the bottom is $1\frac{3}{8}$ in. The site of this borehole is $98\frac{1}{4}$ ft. above datum line." Here Mr. Sawyer gives a detailed description of the rocks intersected in Nos. 14 and 15 boreholes and their *actual* thicknesses, calculated on a vertical borehole, and with a dip of the Witwatersrand Strata of 30 degrees.

"*Proved Total Thicknesses of Witwatersrand Strata.*—No. 15 Borehole:—Upper Witwatersrand Strata, 450 ft. 7 in.; Lower Witwatersrand Strata, including Igneous Sheets, 658 ft. 5 in.; total thickness, 1,109 ft. *Proved Thickness of Jeppestown Series, including Igneous Sheets*: No. 15 borehole, Lower Witwatersrand Strata, 658 ft. 5 in.; No. 14 borehole, Lower Witwatersrand Strata, 515 ft. 2 in.; No. 13 borehole, Lower Witwatersrand Strata, Mica Diorite Sheet, 131 ft. 2 in.; total, 1,304 ft. 9 in.; *less* total thickness of Igneous Sheets proved, 655 ft. 10 in.; total thickness of Sedimentary Strata proved, 648 ft. 11 in. Complete thickness of Jeppestown Series, calculated on a probable strike and undisturbed deposition, 2,525 ft.; *less* proved thickness, 1,304 ft. 9in.; unproved thickness, 1,220 ft. 3 in. Neither of these boreholes have been surveyed. No. 14 borehole may have deflected very slightly, if at all. No. 15 borehole may have deflected slightly owing to its greater depth. The deeper boreholes which have been surveyed show a more or less slight deflection northwards. If, therefore, No. 15 borehole has deflected similarly to the other deep ones, the lower strata may be slightly thicker than shown above. I have thought it well to give a very detailed description of the rocks passed through in No. 15 borehole; as besides showing why, in my opinion, No. 15 borehole passed through the lower portion of the Main Reef Series from 794 ft. 4 in. to 1,318 ft. 4 in. it is the only published detailed account of the rocks in depth at and near the contact of the Upper and Lower Witwatersrand Systems. When I started prospecting work in this New Gold Field there was a consensus of opinion, amounting in some quarters to a certainty, among geologists, that the stratigraphy of the 'Rand' had been in its essential points finally diagnosed. Dr. G. A. F. Molengraaff, late Head of the Transvaal Government Geological Survey, gives sections in his book 'Geology of the Transvaal,' English trans., 1904, pp. 10-12, showing a total thickness of strata from the Hospital Hill Slate to the Main Reef, of about 4,000 ft. at Braamfontein on the Central Rand and of about 6,200 ft. at Witpoortje. Without a thorough and systematic survey, such as is now being made by the Government, it was difficult to arrive at any other conclusion, and this view also appeared to me from repeated and personal observations to be the correct one. The greater thickness of intervening strata on the West Rand was explained by a *thinning out* of the whole formation eastwards. The sites of our boreholes are about 50 miles due south of the Cinderella Deep Mine, which is about 15 miles east of the centre of the Central Rand. These views account for my starting prospecting operations so near the Hospital Hill Slate, and to my taking the 60 ft. dark chloritic grit, proved in Nos. 9 to 13 boreholes, to correspond to the Main Reef 'Red Bar' on the 'Rand' at the time I discovered it.

"As borehole after borehole was put down, and further information acquired, I came to the conclusion that, whatever the thickness of strata intervening between the Hospital Hill Slate and the Main Reef might be on the 'Central Rand,' it was thicker in the New Rand than I had at one time expected. I therefore appended to my report of the 28th January, 1911, a sketch section, published on that date, in which I gave prominence to the Government Reef. A comparison of this section with the one of the New Rand at that date, on the same sheet, might easily have suggested a doubt as to whether the 60 ft. dark chloritic grit was the Main Reef 'Red Bar.' The results obtained in No. 14 borehole removed all doubt I may have had in the matter, and showed me not only that the 60 ft. dark chloritic grit belongs to the Government Reef Series, but that the Doornfontein Beds (Jeppestown Series), which underlie the Main Reef Series, were thicker than I expected, probably owing to the occurrence in them of so much intercalated igneous matter. Meanwhile a proper and systematic survey of the 'Rand' had been started by the Government Geological Survey, and Dr. E. T. Mellor (who is doing this work) read a paper before the Geological Society of South Africa, in Johannesburg, on the 20th March, 1911, on 'Some Structural Features of the Witwatersrand System on the Central Rand,' in which he states that the Government Reef Series in the standard sections of the Central Rand 'appears to have been overlooked' as a clearly distinguished series by former geologists. He further states—'It is also very probable that the section presented by the Central Rand, usually regarded as one of the standard sections of the Lower Witwatersrand system, has been much modified, particularly as to the thickness of the various series represented, by faulting.' Dr. Mellor read a further paper before the Geological Society on the 20th November, 1911, on 'The Normal Section of the Lower Witwatersrand System on the Central Rand and its connection with West Rand Sections.'

"What concerns us most at the moment in Dr. Mellor's important work is his description of the Jeppestown Series and his confirmatory statement that 'these beds underlie the Red Bar' . . . 'a term applied to certain quartzitic beds which form a somewhat prominent outcrop at some distance below the Main Reef.' The stratified Witwatersrand rocks proved in No. 14 borehole and those described under C. in No. 15 borehole bear great resemblance to those of the Jeppestown Series as described by Dr. Mellor, always allowing for weathering on surface. These rocks are very dissimilar from those described under B. in No. 15 borehole, and there is a very sharp and distinct change in the character of these two sets of rocks at a depth of 1,318 ft. 4 in. in No. 15 borehole. The formation from Nos. 12 to 15 boreholes is, from all the evidence obtained, undisturbed. The quartzites proved above the Mica Diorite differ from these proved below this sheet, and are up to 1,318 ft. 4 in. in No. 15 borehole, all of the same character, namely, very fine-grained and more or less dark and chloritic. What corresponds to the low-lying ground on the 'Rand' formed by the weathering of these soft strata is also apparent here, where the results obtained in No. 14 borehole point to a depression of the sub-outcrop between Nos. 13 and 15 boreholes. The thickness of these strata (including the several igneous sheets proved, which total 655 ft. 10 in.) from 1,318 ft. 4 in. in No. 15 borehole to the base of the Mica Diorite in No. 13 borehole is 2,525 ft., of which more than half this thickness has been proved. Dr. Mellor's greatest thickness for the Jeppestown Series is 3,700 ft., and his smallest thickness is 2,000 ft. Allowing for a few reverse faults among the proved strata, which are otherwise remarkably regular and undisturbed, with a dip of 30 degrees, and assuming a similar condition in the much smaller unproved portion, the total thickness of strata (including the intercalated igneous sheets) from the Hospital Hill Slate to the base of the Mica Diorite sheet (proved in No. 13 borehole) is 7,820 ft. The total thickness of strata from the Hospital Hill Slate to 1,318 ft. 4 in. in No 15 borehole (the base of the Main Reef Series) is consequently 10,320 ft., which is approximately the thickness shown by Dr. Mellor in his Witpoortje Section. The rocks intersected in No. 15 borehole from a depth of 794 ft. 4 in. to 1,318 ft. 4 in., and described under B, are to all appearance quartzites, grits and pebble beds belonging to the Main Reef Series, and present the same characteristics. Moreover, they contain from and including the 7 in. reef (6 in. actual thickness) downwards—a dark chloritic grit 32 ft. 11 in. in thickness with more or less large scattered quartz pebbles such as occur in the 'Red Bar,' underlying the Main Reef 'at some distance,' on the 'Rand.' The oxidation of the iron constituents of the chlorite and that of the pyrites which this rock contains would colour it red at surface. This rock is very similar to the 60 ft. dark chloritic grit referred to above, and which, it is now quite clear, belongs to the Government Reef Series. From all these facts, it does seem highly probable that No. 16 borehole, which will be situated 2,150 ft. from No. 15 borehole in plane of probable true dip will intersect the other reefs of the Main Reef Series, and it is further very probable that in view of the similarity between the New Rand Section, so far proved, and Dr. Mellor's normal section, the Main Reef Series will here be found fully developed. The drill is now being erected on its 16th site, and boring should be started by the end of the month. This site (No. 16) is 14·8 ft. above datum line."

In conclusion, in view of its importance, its bearing on the New Rand, and to its to some extent coinciding with the views on which he ventured on such an undertaking as the New Rand—in a hitherto hidden and unknown area, distant from the Rand, Mr. Sawyer quotes the remarks on the conditions of deposition of the Witwatersrand system contained in Dr. Mellor's paper of the 20th November, 1911.

"S.A.M.J." ANNIVERSARY NUMBER.

Special Competitions—An Interesting Announcement.

Essay Competition.

In connection with the issue of our twenty-first Anniversary Number, which will be published in May next, four prizes, each of £3 3s., are offered for the best essays received on some aspect of—

(a) Mining;
(b) Metallurgy;
(c) Mechanical Engineering;
(d) Electrical Engineering.

One prize will be given for the best contribution received under each of the above headings. Essays must be written with special reference to the mineral industries of the Union of South Africa, Rhodesia, German South-West Africa, Portuguese East Africa, or the Katanga region of the Belgian Congo. They must be of topical and South African interest. A very wide range of subjects is thus open, and it is hoped and believed that many valuable contributions will be submitted. The winning essays will be reproduced in the Special Anniversary Number of the *South African Mining Journal*, and will thus find a place in a production which will be remarkable in the records of South African journalism. The attention of competitors is directed to the following rules of the competition:—

1. Contributions must reach this office not later than March 31st, 1912. They must be addressed: "Anniversary Department, *South African Mining Journal*, P.O. Box 963, Johannesburg, Union of South Africa," and marked "Essay Competition," in the top left hand corner.

2. Contributions must be of not more than 1,500 words in length.

3. It must be distinctly understood that the decision of the Editor and Editorial Staff of the *South African Mining Journal* and of such judges as may be asked to adjudicate will be final and absolute.

4. Under no circumstances can responsibility be recognised for the safe return of manuscripts. At the same time every endeavour will be made to secure their safe return, if a fully stamped and addressed envelope is enclosed.

5. The right is reserved to reproduce in any issue of the *South African Mining Journal* all or any of the contributions submitted. All essays reproduced will be paid for at usual rates.

Photographic Competition

In connection with the same issue a prize of £2 2s. will be given for the best photograph illustrating some aspect of: (a) Mining; (b) Metallurgy; (c) Mechanical Engineering; (d) Electrical Engineering. Photos must be of South African interest and must be of topical value. The winning photograph will be published in the Special Anniversary Number of the Journal.

The attention of competitors is directed to the following rules:—

1. Photographs must reach this office not later than March 31st, 1912. They must be addressed "Anniversary Department, *South African Mining Journal*, P.O. Box 963, Johannesburg, Union of South Africa," and marked "Photo Competition" in the top left hand corner.

2. The size and shape of photos submitted is left entirely to competitors.

3. It must be distinctly understood that the decision of the Editor and Editorial Staff of the *South African Mining Journal* and of such judges as may be asked to adjudicate will be final and absolute.

4. In no case can photos submitted in this competition be returned, and the right is reserved to reproduce all or any photos received in any issue of the *South African Mining Journal* without payment.

In all cases in which photos are reproduced in connection with this competition the name of the photographer will be acknowledged.

AN ACCURATE METHOD FOR DETERMINATION OF GOLD AND SILVER IN WORKING CYANIDE SOLUTIONS.

Uniformly Good Results Obtained.

[By William Bettel.]

The following method has been in constant use in my laboratory during the past four years, and has given complete satisfaction. No other process tried has given such uniformly accurate results. I can therefore confidently recommend it, for "check" assays particularly. There is no particular novelty about the method, it is a combination of the cuprous salt, and lead acetate-zinc methods of precipitation of the precious metals used consecutively. Before describing the process, a few remarks are necessary. The methods of precipitation by copper sulphate, sodium sulphite and sulphuric acid as described or Christy's adaptation of Professor Wilde's method give useful comparative results when used on solutions from current sands or slimes, but when ferricyanides are present in solution (as in treatment of accumulated slimes or oxidized tailings) some auricyanides are present, which are incompletely reduced to aurocyanide and precipitated by the cuprous cyanide formed. I have never failed to obtain a further amount of gold from the filtrates from the gold and silver—cuprous cyanide (plus cupric ferrocyanide) precipitate however obtained. This. I take it, arises from the slight solubility of the double copper-gold and copper-silver cyanides in the solution. I find that if I avoid the use of sulphites and use a $Cu_2 Cl_2$ solution (in hydrochloric acid) for precipitation, adding ferrocyanide if only traces are present in the solution, filtering, washing once or twice, placing the paper containing the copper precipitate to one side (after opening up and sprinkling litharge over the precipitate), I can completely precipitate the final traces of gold (and silver) from the filtrate by the use of lead acetate, zinc fume and excess of hydrochloric (not sulphuric) acid. The precipitate of spongy lead (which carries with it the balance of the copper and traces of gold and silver remaining in solution from the cuprous-cyanide precipitate) is allowed to stand until the zinc is completely dissolved, as seen by the cessation of evolution of hydrogen in the acid solution), is filtered and washed slightly. When drained the paper containing the lead, etc., precipitate is removed from the funnel, placed on the top of the litharge-covered "copper" precipitate, the precipitated lead, etc., covered with a little litharge and set aside to dry. When dry the paper is cautiously burnt off in the muffle (or at its mouth) at a temperature lower than the melting point of litharge. There is no absolute necessity to wait until the precipitates are dry, I have frequently put the wet filters into roasting dishes and placed them in a muffle kept at a dark red heat, with good results. The precipitates are then fluxed in the ordinary manner with soda. borax, a little silica. litharge and charcoal, and *slowly* melted down to admit of perfect collection of the precious metals. The lead button obtained is cupelled and the gold and silver weighed. If only gold is required, I have made a practice of adding the requisite quantity of solution of silver nitrate (either the ordinary solution used for testing cyanide solutions or a special one containing .05 milligramme silver per drop (20 drops to 1 c.c.) to the solution before adding the cuprous salt. This enables one to cupel at the correct temperature and avoid undue cupellation losses.

The solutions used are:—1. A saturated solution of cuprous chloride ($Cu_2 Cl_2$) in hydrochloric acid. The bottles. both storage. and the one in current use, contain excess of metallic copper. A good way of making the salt is as follows: Fill the storage vessel with clean copper scrap (high conductivity copper). Fill this bottle to the neck with a solution of cupric chloride (green chloride—$Cu Cl_2$ dissolved to saturation in dilute hydrochloric acid (1 acid 1 water). This solution is then mixed with an equal volume of concentrated hydrochloric acid). When the copper has been converted into the colourless cuprous salt a suitable amount is transferred to a small bottle containing clean copper foil. From this the solution is taken for use as required. The "stock" bottle (containing the copper and $Cu_2 Cl_2$ in HCl) is re-filled with the acid $Cu Cl_2$ (green) solution, as often the reagent bottle is replenished with colourless $Cu_2 Cl_2$ solution. 2. A 10 per cent. solution of lead acetate quite free from silver. 3. Pure hydrochloric acid. I usually take 20 assay tons of solution for each assay so that no confusion may possibly exist as to the amount taken. When very poor solutions are to be tested—and it is seldom that less than 0.1 grain of gold per ton requires to be estimated—a suitable quantity of cyanide solution is taken so that the final minute gold cornet may be readily weighed.

Estimation of Soluble (and insoluble) Gold in Slimes Residues:—A useful application of the above method is adopted by me in ascertaining the soluble and insoluble gold in slimes pulp (residues). An indeterminate amount (but not less than 40 assay tons—*wet*) of the pulp is filtered under decreased pressure (using a Büchner porcelain funnel, with a filter paper supported on a circle of linen to prevent breaking of filter by vacuum) and washed to remove all soluble gold. When drained the moist pulp is removed from the funnel without loss, dried and weighed in terms of assay tons. This weight is recorded. The solution and washings are mixed in a flask with a few drops of the acid cuprous chloride solution. If the precipitate turns pinkish after standing a few minutes sufficient ferrocyanides are present, if not, a few drops of a solution of an alkalinac ferrocyanide are added. The flask is shaken at intervals until, on standing, the precipitate settles clear. The precipitate is removed by filtration through a plaited filter of fairly open texture and the precipitate removed from the flask completely by shaking with filter paper-pulp. (I generally invert, after shaking with a circular motion, over a porcelain basin and transfer from the basin to the filter. I also use a similar basin—without the use of paper-pulp—to receive the heavy lead precipitate produced in the next operation.) To the filtrate 5 c.c.'s of lead acetate solution are added and the liquid shaken, then about 1-3rd of a teaspoonful (say 8 grammes) of zinc fume is added and the mixture well shaken by a circular motion. After the zinc has had time to act upon the lead, 50 c.c.'s of HCl are added, a few c.c.'s at a time, and the mixture allowed to stand with occasional shaking until the action apparently ceases, and the lead, etc., precipitate finally settles, the supernatent solution being clear. This is now filtered through a plaited filter and the precipitate removed to a porcelain dish by adding water to the flask and inverting over the dish. After the lead is transferred from the basin to the filter, the flask is washed out several times until the final wash shows no trace of black particles. After the last rinsing water has passed through the paper, a final wash is given to the edge of the paper. The filter paper containing the $Cu_2 Cy_2$ ppt. is taken out of the funnel, opened out and spread on thick blotting paper, the precipitate covered with litharge by sprinkling the latter over the whole surface of the paper; the second filter containing the precipitated lead is placed over the first filter and its surface in turn covered with litharge. The papers are then dried, incinerated and the residue assayed in the manner previously described. The weight of fine gold eventually obtained is divided by the weight (in assay tons) of the washed and dried precipitate, which is powdered, mixed and assayed in the usual manner.

As an example:—

Weight of dried (washed) slime residue, 21·48 A.T.

Fine gold from assay of solution $\dfrac{7·2 \text{ "dwts."}}{21·48 \text{ A.T.}}$

– 0·33 dwts. fine gold per ton of dry pulp.

2 × 2 A.T. of slimes residue (washed and dried.)

$$\left.\begin{matrix}\dfrac{0·6}{2}\\[1ex]\dfrac{0·6}{2}\end{matrix}\right\} = 0·3 \text{ dwt. per ton fine gold.}$$

	dwts. per ton.
Soluble gold	0·33
Insoluble gold	0·30
Assay value of pulp (dry)	0·63

ACCIDENTS IN TRANSVAAL MINES.—II.

Some New Views—Are Rand Methods to Blame?—Utility of Hanging Wall Inspectors.

THE following is the concluding portion of Mr. J. E. Vaughan's contribution to the discussion on Transvaal Mine Accidents, delivered by the Chemical Metallurgical and Mining Society of South Africa:—

I notice in the Chamber of Mines Report for 1910, that in that year the amount of compensation paid for accidents was £160.000 per annum; apart from reasons of humanity, it would appear sound policy to endeavour to reduce this amount. "Experts" of all kinds are very numerous on the Rand, but we have not yet heard of the appointment of an Accident Expert. It may be agreed that the Mine Inspectors should be the Accident Experts, but it must be remembered that Inspectors of Mines have not the power of getting behind the scenes, which a representative of the houses would have. A Mine Inspector may notice a mine getting into a dangerous state, but he cannot tell whether it is the fault of the manager, or due to the policy he has to carry out. A Mine Inspector has to appeal to a Magistrate to support him, whereas an unofficial inspector would have the consulting engineer to back him up. It is a very difficult thing to prove to a Magistrate that such and such a system of mining is dangerous and should be stopped, whereas a few minutes talk with a consulting engineer will cause him to look into the matter, and, if necessary, rectify it. Systematic timbering would prove very expensive, and in only a few cases, of any value. A stone weighing a few pounds will do enormous damage in a steep stope, and unless the timbering is so close as to be impracticable, systematic timbering will not prevent such small stones falling. Again, stopes in the same mine vary so, that it would be impossible to lay down any rule for timbering which could apply throughout a mine. Systematic timbering in a coal mine is a different proposition, the working places are flat as a rule, and most of the timber is drawn and used again; although systematic timbering has not increased the costs in coal mines, it would do so very considerably on the Rand, where the timber would usually have to remain, once it was put in. Rather than adopt systematic timbering, it would be better to adhere to the following conditions in stoping:—

Steep Stopes.—Beat the bottom of the stope face well back, and have boxholes at frequent intervals, so that the lasher boys are protected from falls of rock by the overhanging portion of the stope face; it is among lasher boys that the greater proportion of fall of rock accidents occur. Stull at frequent intervals, keeping the stulls as close to the face as possible and well loaded.

Flat Stopes.—These should be well packed, and if the hanging is bad, the packs should be kept well up to the face: the argument against this is that the fines are blown into the pack and lost, but if loose dirt is shovelled up against the pack this loss will not amount to much.

In both flat and steep stopes pillars must be left, but where and of what size depends on local conditions, and must be left to the discretion of mine officials; but when a mine captain has hardened his heart and given instructions to cut a pillar, he should cut a big one; small pillars lose so much in the cutting that when completed they are neither useful nor ornamental, but sources of danger. Timber should be used more freely than it is now, and the timber bill of a mine should not be too closely criticised if it is high. We often hear that sticks cannot be put in near the face, because they will be blown out by the first blast; this trouble is much exaggerated, as a stick, if properly put in, will take a lot of knocking out. If sticks are blown out they should be replaced at once, but miners often start their boys and then replace blown out sticks. Explosive accidents are enormously high, and in the majority of cases preventable, if a man carefully examines his working place, he should find the old holes, but with the rushing methods now adopted, men sometimes do not examine their places carefully, and so holes are overlooked: explosive accidents in winze and shaft sinking are more easily forgiven, but with care many of these could be avoided. Miscellaneous accidents, such as falling down shafts, found dead in shafts and stopes, struck by skip, etc., etc., are very often due to the ignorance of the native. The policy of keeping new boys in gangs is a wrong one, they wander about the mine like lost sheep, climb over fences and get into danger, because there is no one to warn them not to do so: new boys should be distributed among experienced natives. I am convinced that the accident and death rate would be reduced if the following conditions prevailed: 1. If mine officials and miners were less "rushed" than they are at present; 2. If more attention were paid to accidents, and less to low costs; 3. If more care was taken of inexperienced natives underground; 4. If the mine officials would insist on the regulations being observed. No one will contend that the natural dangers on the mines of the Witwatersrand are so great that they cannot be surmounted with care and skill. The Government Mining Engineer's Report gives a list of the mines which have the highest and lowest death rates, why is it that some mines figure more than once in the same list, it cannot be entirely a question of luck. Much depends upon the manager of a mine, changes of management are usually associated with an increase or decrease in the death rate; a successful manager is expected to get an increased tonnage and low costs, but how rarely do we find that these are associated with a low death rate. We have got so used to accidents in the past that we have grown callous: it was, and may be still, the custom on many mines in England to stop work for the day as soon as a fatal accident occurred, and again on the day of the funeral; possibly if that excellent custom prevailed on the Rand, we should realise more fully the gravity of death, and have fewer accidents. It may be argued that I have viewed the question entirely as an Inspector of Mines, whose view is naturally that the accident rate must be diminished; to argue that to carry out successful mining on the Rand necessitates the present appallingly high death rate, is a serious reflection on the capabilities of our engineers.

City and Suburban.

The report on working operations at the City and Suburban mine for the December quarter shows that 79,422 tons were milled, from which 30.719·60 ozs. of gold were recovered. Revenue from gold, including sundry revenue, £453, amounted to £129.254. Working expenses absorbed £78.517, or 19s. 9·265d. per ton, which left a profit for the quarter of £50,737, or 12s. 9·938d. per ton. The number of feet driven, sunk and risen on development work, exclusive of stopes, was 2,532 feet.

	Distance Exposed. Feet.	Width. Inches.	Assay Value. Dwts.
Main Reef	491	37·6	6·9
Main Reef Leader	668	22·3	17·7
South Reef	331	15·5	19·2
Totals and Averages	1.493	25·8	12·7

The tonnage stoped including ore obtained from developing faces, was 89,594 tons. Capital expenditure for the quarter amounted to £20,944. At December 31 the company held 6,329.748 ozs. of fine gold in reserve. The new sands plant and tube mills were completed during December and are now working satisfactorily.

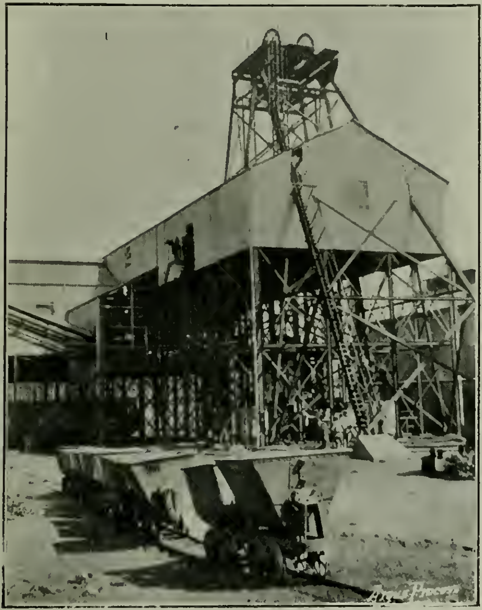
MINING EXAMINATIONS.

Private individual tuition for Mine Managers', Mine Captains', Mine Surveyors', Mechanical Engineers' and Enginedrivers' Examinations, Practical Mathematics and Electrotechnics. Correspondence lessons where personal tuition is impossible.—E. J. MOYNIHAN, Consulting Engineer, 10, Anglo-Austrian Buildings, Box 2061, Johannesburg.

THE EQUIPMENT OF THE APEX COLLIERY.

A Detailed Description of the New Plant and the Mine.

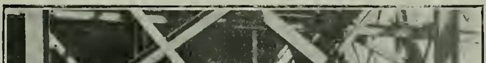
In describing the Apex Colliery and equipment, it is necessary to bear in mind that the colliery is only a portion of the assets of the Apex Mines, Ltd., and that the Main Reef Series underlies the coal beds, and fully three-fourths of the farm Rietfontein, in extent 3,577 morgen 67 square roods, owned by the company. The Main Reef having been intersected in numerous boreholes, is now being developed from a seven-compartment shaft on the northern portion of the farm, and a dip shaft, 6,500 feet to the south, is being sunk in order to jointly open up the reef area which will accrue to the company on proclamation. The Johannesburg-Springs line of railway runs through the company's farm, and is tapped at Kleinfontein station for connection with the north shaft, and at Brakpan station for connection with the colliery and dip shaft. The capital of the company is £300,000, divided into shares of the nominal value of £1 each, all of which have been issued. The coal beds lie at a depth from the surface of from 120 to 130 feet, and have been proved to extend over an area of 988 acres, of which 210 acres have been worked out during the past fourteen years, leaving an area still to be worked of approximately 778 acres. The colliery holds a unique position in being nearest to the centre of the gold mining industry, and within 21 miles by rail of the town of Johannesburg. Although the overlying sandstones and shales contain several thin layers of coal, the bottom, or main seam, lying almost immediately above the dwyka conglomerates, is the only workable body. In the area worked up to date, the average width of the seam is about 20 feet, of which the lower 10 feet is worked. The upper portion is a dull inferior coal, mixed with bands of shale. The working method adopted is the pillar and stall system, with alternating pillars and openings, similar in appearance to a draughts board, the pillars being generally about 16 feet square, with openings all round 20 feet wide, from which the coal is extracted; 80 per cent. being extracted and 20 per cent. left in to support the roof. In the area to be worked from the new shaft, the usual pillar and stall system will be continued, but a more rigid provision against fires will be provided by blocking out the new area into panels of 500 feet square with 18 feet drives and 18 feet continuous pillars round same. These pillars will only be broken through where absolutely necessary for the winning of coal from within the panelled area, and it is probable that six openings will suffice for this purpose. If the area within any panel shows signs of any trouble from spontaneous combustion, it will only be necessary to stop up these six openings and isolate the block. The drives round these panels will always be kept open for the purpose of ventilation, and also for mechanical haulage transport. Besides the main hauling shafts, there is an incline shaft, by which the native units proceed to and return from the workings, and in addition there are several air shafts. The ventilation of the mine is easily and effectively carried out, by merely conveying the air currents from the downcast to the upcast shafts. An air shaft is sunk whenever it is found necessary to improve the ventilation. During the year 1909 the output of marketable coal was 258,012·8 tons, which realised a profit of £47,786 19s. 8d., and enabled the payment of two dividends totalling £35,000. The calorific value of coal, as obtained by the Mahler bomb, is 10·5 lbs. of water per lb. of coal.



Main Headgear: Apex Colliery.

The New Equipment.

The main shaft has four compartments, two for hauling, 6ft. 6in. by 9ft. 3in. inside timbers, one ladderway, and one pipe and ropeway. The hauling compartments are served by single decked cages, carrying four, 20 cubic feet, tubs, equal to 1·6 tons of clean marketable coal per trip. The winding engine is a 20in. by 36in. stroke, double cylinder direct acting, with drums 6ft. 6in. in diameter. The steel



The Manager (Coal Section) Mr. J. R. Thom, and the Engineer, Apex Mines, and I.C.S. Students, Taken at a Visit on January 20.

headgear is 71 feet in height, fitted with sheaves 8 feet in diameter, and the heapstead floor, where the trucks are discharged from the cages, is 33 feet above ground level. All engines, with the exception of the winder, are concentrated in one power house, adjoining the screening plant, so as to minimise supervision. The underground and surface mechanical haulage systems are operated separately, by geared haulage engines side by side in the power house, and the ropes are conveyed by sheaves to the underground workings and dump respectively. The electric lighting of the mine, equipment and quarters is by a 50 k.w. compound set, running at 520 revolutions per minute, with a small auxiliary engine and dynamo as a stand-by. The underground working is facilitated and cheapened by the installation of a compressed air coal cutting plant, comprising a Belliss & Morcom vertical high speed compressor, capable of operating 25 coal cutters of the Siskol type. Provision has been made in the power house to allow sufficient room for duplication. The screening plant, driven by a 16in. by 32in. stroke, single cylinder, horizontal engine, is designed to substitute mechanical appliances for labour, as far as possible, and to concentrate all labour required for the various classes of coal under a minimum of supervision. The capacity of the plant is 30,000 tons per month, but, working at high pressure during the daytime only, its capacity could be increased to 40,000 tons per month without difficulty. The plant is entirely driven by steam, generated from five Lancashire boilers, 30 feet long and 8 feet in diameter, with a pressure of 160 lbs. per square inch. The fuel used in these boilers is mostly the very small and unsaleable coal, and the cost of power is thereby reduced to a minimum. On reaching the heapstead floor, the full tubs run from the cages on four inclined tracks, 18in. wide, direct to two power driven automatic tipplers, and after being discharged, gravitate to a creeper chain, by which they are elevated and returned to the landing opposite the back of the cages. The coal falls, during the tipping of the tubs, on to two distributing jiggers inclined at an angle of about 10 degrees, and which deliver on to two screening jiggers inclined at about 15 degrees. The interchangeable perforated plates on the bottom of the jiggers have 1in. holes at the top and increase to 2½in. holes at the bottom, delivering the nuts, peas and fines on to a cross rubber conveyor, which again delivers this product on an elevating rubber conveyor, discharging into two revolving screens on trommels. The rubber conveyors are 30in. wide, and travel at a speed of 188 feet per minute. The speed of the trommels is 16 revolutions per minute, the length 18 feet, and diameter 4ft. 6in. The wire mesh, or netting, first seives out the fines, then the peas, and the nuts, being the larger product are discharged at the end. The dross, or fines, are shot down into a hopper, delivering into the dump trucks, and the peas and nuts are conveyed in inclined shoots to the hoppers standing over the railway trucks, on to a scraper conveyor, which delivers into the beforementioned hoppers, also on to the bagging, shale or picking belts, as may be required for mixing or bagging, etc. The round coal, after being separated by the fines by jigging screens, as described above, proceeds along two picking belts, of the plate belt type, travelling at 65 feet per minute. These belts are 60 feet long, 6 feet wide, with a centre channel 18 inches wide, to carry the shale and waste picked from the marketable coal as it proceeds along the belts. At the end of each picking belt, inclined shoots are fixed, so as to deliver the coal on to suspended radial ends; these are really rubber belt conveyors, with belt driven raising and lowering gearing, by which the coal is lowered, instead of dropped, into the railway trucks, running on parallel lines beneath the plant. In these inclined shoots are trap doors opening, when required, to deliver the round coal on a rubber bagging belt conveyor, which delivers the product into a series of distributing hoppers, situated at the side of the railway tracks, and adjoining the bagging platform, for transport by road or rail. The waste falls over the end of the shale channel through openings in the shoots abovementioned, on to a cross belt conveyor, which also carries any fines left in the picking belts; this belt discharges into a waste hopper adjoining the dross bin, which contains the refuse from the trommels. These bins deliver into the dump trucks, transported by mechanical haulage to the dump. The distributing series of hoppers adjoining the bagging platform, is a feature of the plant, and consists of six compartments which can be filled from the one cross belt by means of a revolving shoot, which can be turned to deliver into any compartment. The compartments of this hopper can be used as follows: One end compartment with platform attached for bagging round coal for rail or road transport, one end compartment for bagging nuts for rail or road transport, three side compartments for road transport or rounds, nuts and peas in bulk, the remaining side compartment adjoins the railway tracks, and can be used for keeping a truck load on hand to meet any demand, when the mine is not working. It must be understood that any class of coal can be sent on to this cross bagging belt at one end, and distributed into any compartment of the hopper at the other end, thereby bringing all handling and supervision to one point. It is also possible, by means of the above-mentioned bagging belt or a cross scraper conveyor, to again mix all classes of coal, after the waste and refuse have been sent to the dump, thereby obviating the possibility of any particular product being greater than the demand. The screening plant buildings are steel with wooden floors, and supplied by Messrs. J. & R. Niven, representing Messrs. A. & J. Main, and Messrs. Campbell Bennie & Co.

The Meyer and Charlton.

The salient features of the operations at the Meyer and Charlton during the December quarter were: 1,034 feet driven, sunk and risen; 41,016 tons crushed; 17,925 ounces of gold, or 8·740 dwts. per ton, recovered; revenue from gold, £76,200, or 37s. 1·876d. per ton; working costs, £36,239, or 17s. 8·049d. per ton; working profit, £39,961, or 19s. 5·827d. per ton; capital expenditure, £6,175. About 11·06 per cent. of the net proceeds of mining operations is payable to the Government in respect of undermining rights leased. The working profit exceeded that for the September quarter by £10,231. The new electrical compressor has been brought into service.

Van Ryn Gold Mines.

The directors of the Van Ryn report that during the December quarter 4,599 feet were driven, sunk and risen; 116,210 tons were milled, yielding 38,319 ounces of gold, or 6·595 dwts. per ton; revenue from gold amounted to £162,967, or 28s. 0·565d. per ton; working costs were £88,287, or 15s. 2.334d. per ton; and working profit was £74,680, or 12s. 10·231d. per ton. Capital expenditure absorbed £1,077. The profit exceeds that for the previous quarter by £4,616 7s. 1d. The development footage accomplished is 1,226¾ feet in excess of the footage driven during the preceding quarter. Excavations for the foundations of the new steel headgear and electric winding plant at No. 2 shaft were commenced in December.

Aurora West.

Results at the Aurora West during the December quarter may be summarised as follows: Development, 2,489½ feet; ore milled, 33,039 tons; gold won, 9.345 ounces, or 5·657 dwts. per ton, valued at £39.665, or 24s. 0·130d. per ton; working costs, £32,015, or 19s. 4·56d. per ton; working profit, £7,650, or 4s. 7·57d. per ton; capital expenditure, £8.028. The working profit shows an increase of £626 16s. over that for the previous quarter. The erection of the additional cyanide tanks has been completed, and the old portion of the mill is now being renovated.

Randfontein Deep.

The directors submit the following report on the operations ot the company for the three months ended 31st December, 1911:—The north shaft was sunk 223 feet to a total depth of 2,014 feet. As the shaft was deepened, the amount of water to be dealt with increased steadily. Whereas the total quantity pumped and baled for the month of September was 10.775.933 gallons, the total for December was 19,311,400 gallons. This considerably interfered with sinking operations, and accounts for the limited footage accomplished. The formation passed through was quartzite, with occasional reef stringers, which latter go to show that the shaft has entered the series of reefs overlying the Randfontein Leader.

Rhodesian Section.

LATEST CHARTERLAND NEWS.

Rhodesia and Katanga Junction Company—Deferred Pay—Antelope Developments—Cam and Motor Results—L. R. M. and L. Company; Reports from Various Properties—An Official Dividend Statement—The Giant Output—Globe and Phoenix Ore Reserves.

The prospectus of the Rhodesia-Katanga Junction Railway and Mineral Company, Ltd., which has just been issued with a capital of £1.510,000 and £800,000 5½ per cent. first mortgage debentures, has as directors Messrs. Tyndale White, Robert Williams, J. H. Birchenough, M. White, and C. F. Rowsell. The prospectus contains a letter from Sir Charles Metcalfe, in the course of which he states:—

> Dear Sirs.—With reference to your letter, asking for my opinion on the condition of the Rhodesia-Katanga Railway. I beg to state that I went over the whole length of this line, from Broken Hill, in North West Rhodesia, to the Congo Border, in June of this year, after the rainy season, and found that the Railway was in good order, that the trains ran very smoothly, and that the openings of Bridges and Culverts for the waterways appeared to be ample. Very little expenditure on the line should be needed for some time, and that should be easily met out of revenue. The traffic has exceeded what was anticipated. I found a steady supply of cattle, grain, and foodstuffs being carried each week over the railway and a good passenger traffic. During the first eight months of this year, notwithstanding the fact that no railway material was carried for the extension of the Congo Line, the railway earned a profit of about £1,000 a month more than the average monthly Debenture interest. In September, when the permanent way material for the construction of the extension of the railway northward into the Congo Territory began to be carried up the line, and the copper from the mines to be shipped southward, the profit was double the amount required for Debenture interest. I, therefore, think that I am justified in expressing the opinion that this line is now in a position to pay interest on the £800.000 First Mortgage Debentures, quite independently of the guarantee of Tanganyika Concessions, Limited, all the more, as, with the development of the large mining fields of the Lower Congo, a considerable expansion of the traffic may be looked for.—Yours truly, CHARLES METCALFE.

An important security for the debentures, after the railway, is the Kansanshi mine. The Kansanshi mine is located in North-Western Rhodesia at a distance of about eighty miles from the railway, and comprises ninety mining claims or thereabouts. Two thousand tons of 90 per cent. copper have been produced and shipped to Europe, realising about £100,000. Pending the completion of arrangements to provide for the more economical transport of the copper from the mine to the railway, it was decided to suspend smelting opeartions and to confine work to the further development of the mine. These developments have progressed in a satisfactory way, exposing important bodies of payable ore.

* * * *

The bugbear of the deferred pay system, one of the greatest of the disadvantages under which the old Bureau had to labour, is now stated to be on the eve of being abolished. This is one of the first fruits of the newly-organised Rhodesia Native Labour Bureau, and has been brought about as the result of joint representations made by the Marquis of Winchester and Mr. Kempster, to the Administrator of Northern Rhodesia, during their recent visit to Livingstone. The deferred pay system cost the old Bureau some £4,000 annually, and was, moreover, exceeding unpopular among the natives recruited.

* * * *

Important results have been obtained on the Antelope, the reef, much improved in value, having been picked up at the 8th level, where a dyke had appeared. The dyke was passed through going east on this level, and the reef encountered, averaging 17 dwts. across 82 inches. Driving has proceeded so far for about 35 feet. Sinking is now proceeding to the 9th level, preparatory to crosscutting to the reef.

The following cable was received in mail week by the Cam and Motor Company, Ltd., in London:—"Total footage driven and sunk for month is 390 feet. No. 5 level crosscut has been extended 48 feet, a total of 52 feet. No. 3 level rises (at) 95, 209 and 312 feet south, all in good values. No. 4 level main south drive has been extended 58 feet, a total of 372 feet, from 314 feet to 351 feet, average value assaying 11½ dwts. per ton over 60 inches. From 351 feet to 372 feet, in footwall country of no value. East crosscut 300 feet north shaft No. 1, from 59 feet to 91 feet average value 9½ dwts. Started rising from No. 4 level to connect with No. 3 level and at same point sinking a winze to connect with No. 5 level. Experimental plant, 440 tons treated, £962 recovered; we expect to start treating accumulated slimes about end of next week."

* * * *

The London and Rhodesian Mining and Land Company, Ltd., received the following cables in mail week:—"Venice Claims.—Main shaft sunk 50 feet; total, 250 feet; average value from 175 feet to 250 feet, 5¼ dwts. Intend crosscutting and driving at 270 feet." "Botha and Promoter.—Total footage driven and sunk for month is 139 feet. Botha shaft sunk 15 feet, total 117 feet. Promoter, 115 feet level east drive off incline shaft driven 31 feet; average width is 6 feet; average value is 6 dwts. North-east drive started 25 feet in above drive; driven, 35 feet; total, 60 feet from shaft; average width is 6 feet; average value is 7 dwts." "Rouge Mine.—5-stamp mill ran 491 hours; crushed, 470 tons; yielding 150 ozs.; 321 tons of sands were treated, yielding 88 ozs. of fine gold; total value of bullion from mill and by cyanide estimated at £1,011. Footage for the month, 97½ feet. 160 feet level winze has been sunk 8 feet; total, 37 feet, in hanging wall country; will crosscut through lode at 50 feet down. 80 feet level south crosscut driven a further 23 feet; total, 23 feet, in quartz schist; latest new crosscut now in 35 feet with solid quartz in face; assays later on."

* * * *

The following information has been forwarded to us by the secretary of the British South Africa Company, Ltd.:—The following dividends were declared by Rhodesian mining companies during 1911:—

	Per cent.	Amount.
Eldorado Banket	30	£90,000
Gaika	5	13,025
Giant	40	104,836
Globe and Phoenix	160	320,000
Lonely	10	27,101
Rhodesia Chrome	10	5,946
Selukwe Columbia	10	12,500
Wankie Colliery	12½	25,327
		£598,735

The dividends declared by similar mining companies during 1910 amounted to £477,750, the total distributed for 1911 thus showing an increase of £120,985. In addition, dividends amounting to £288,457 were declared by Rhodesian development, trading and other miscellaneous companies during 1911.

* * * *

Thirty stamps and two tube mills ran 29·158 days in the Giant Mines mill during December. Ore crushed, 11,000 tons, yielding 4,260 ozs.; estimated value, £18,072; estimated profit, £10,532.

The Globe and Phoenix G.M. Company, Ltd., have issued the following development figures for the month of December. High values are not reduced, but in cases where the width is below 30 inches the values are reduced so as to show the average over a stoping width of 30 inches:—

Main shaft has been advanced 5ft. 17th level, drive, north foot wall leader has advanced 20ft., average width of reef 8ins., average value over a stoping width of 30ins., 13 dwts. 17th level, east portion, No. 3 A winze north, 17th to 19th levels, has advanced 9ft., average width of reef 6ins., average value over a stoping width of 30ins., 14 dwts. 18th level drive, south from 2 A winze, east portion, has advanced 54ft., average width of reef 24ins., average value over a stoping width of 30ins., 87 dwts. 17th level, east portion, No. 3 A rise north, 17-16th level, has advanced 19ft., average width of reef 13 ins., average value over a stoping width of 30ins., 4 dwts. 18th level, No. 1 A winze north, has advanced 29ft., average width of reef 13ins., average value over a stoping width of 30ins., 3 dwts. 18th level, west portion, drive north, has advanced 87ft., average width of reef 18ins., average value over a stoping width of 30ins., 5 dwts.

It is officially announced that the ore reserves at the mine at December 31st last totalled 173.613 tons, of the average value of 37 dwts. per ton. The gold contents work out to 321,184 ozs., value £1,348,973. At the end of September last, the reserves totalled 177,606 tons of the average value of 35·7 dwts. per ton, giving a gross value of £1,332,592.

RHODESIAN DIVIDENDS.

The 1911 Total—Aggregate Distribution Approaching a Million—Some Important Improvements.

In the following table the amounts of money distributed by Rhodesian enterprises during last year are stated and the sums involved are contrasted with those distributed in the preceding year. The total for gold mines and corporations directly concerned with mining is £925,698, and is made up as follows:—

Company.	Issued Capital. £	Nominal Value of Shares.	Rate per Share.	Rate per Cent.	Amount Involved. 1911.	Amount Involved. Totals. 1911.	Amount Involved. Totals. 1910.
Bechuanaland Exploration Co., Ltd.	200,000	10s.	7½d.	6	12,000	12,000	12,000
Bulawayo Syndicate	194,051	10s.	5½d.	4½	4,366	4,366	—
Charter Trust and Agency	1,100,000	£1	9d.	3¾	41,250	82,500	123,750
			9d.	3¾	41,250		
Charterland and Gen. Explor. and Finance Co.	163,813	5s.	3d.	5	8,190	12,285	—
			1½d.	2½	4,095		
Eldorado Banket	300,000	£1	3s.	15	45,000	90,000	90,000
			3s.	15	45,000		
Enterprise G.M. and Estates Co.	200,000	£1	2s.	10	20,000	20,000	20,000
Gaika G.M. Co.	242,649	£1	1s.	5	12,132	12,132	—
Giant Mines of Rhodesia	259,745	£1	2s.	10	25,974	103,896	37,597
			2s.	10	25,974		
			2s.	10	25,974		
			2s.	10	25,974		
Globe and Phoenix	200,000	5s.	2s.	40	80,000	320,000	270,000
			2s.	40	80,000		
			2s.	40	80,000		
			2s.	40	80,000		
Lonely Reef G.M. Co.	271,000	£1	2s.	10	27,100	27,100	—
Mashonaland Agency	398,976	£1	6d.	2½	9,974	9,974	—
Mayo (Rhodesia) Development Co.	152,007	£1	3s.	15	22,801	38,001	38,001
			2s.	10	15,200		
Rhodesia Exploration and Development Co. ...	1,507,495	£1	2s.	10	150,749	150,749	150,749
Selukwe Columbia	110,000	5s.	6d.	10	11,000	11,000	—
Willoughby's Consolidated Co.	683,872	10s.	6d.	5	31,694	31,694	—

The following sums were distributed by syndicates affiliated to mining and by industrial undertakings:—

Bechuanaland Trading Co.	£3,164
Bulawayo Market and Offices	1,683
Inyoka Tobacco Co.	898
Montrose Matabele Syndicate	763
Salisbury Board of Executors	1,218
	£7,726

The grand total of distributions under both headings amounts to £933,424, which compares with £883,829 in 1910, £421,950 in 1909, and £197,837 in 1908. It is clear from the above that the industry in Rhodesia is advancing. The figures given above represent a return on the money invested in Rhodesia which may not be very impressive when the large sums invested in the country are taken into account, but which nevertheless represents the distribution of close on a million per annum amongst Charterland shareholders.

The following conclusions on ventilation are worth remembering: (1) That it is desirable to provide means of reversing the air current in every mine. (2) That the whole course of the ventilation should be capable of being reversed. (3) That in the case of most explosions the air should be reversed instantly. (4) That the appliances and arrangements should be at the surface. (5) That the apparatus should be simple, and so constructed as not to be liable to derangement by explosion or accident. (6) That the reversal could be attained as speedily as possible. (7) That as few men as possible should be engaged upon the process. (8) That the process should be performed with the minimum of risk or danger to those engaged on it.

ANSWERS TO CORRESPONDENTS.

"Tin."—There appears to be no Johannesburg representative. The Secretary, Vrede Hoek Tin Syndicate, Capetown, will find the chief office.

"Apex."—Libellous.

"Anxious."—The annual report will be issued next week.

THE YEAR IN RHODESIA.

A Review of the Salient Features of 1911.

IV.—A RECORD OUTPUT—PRODUCTIONS OF DISTRICTS—THE LEADING MINES AND THEIR RETURNS.

The gold output of Southern Rhodesia for December has now been declared at £233,397, or £2,910 less than the November return. Accordingly we are enabled to make a definite statement as to the total output for 1911 and to institute a comparison with returns secured in preceding periods. In the following tables outputs are thus contrasted:—

Year.	Gold.	Other Minerals.	Total.
1911	£2,647,895	£242,864	£2,890,759
1910	2,568,198	222,929	2,791,127
1909	2,623,708	184,414	2,808,122

It will be seen that not only was the output of gold the largest ever declared in respect of one year by the mines of Rhodesia, but that also the aggregate output of coal, chrome iron, copper, lead, etc., exceeded the total declared in respect of any previous year, and the output of all minerals therefore constituted a record by a substantial margin.

District Outputs.

Analysing the returns by districts, it may be observed that the Bulawayo output at £588,465 is £3,389 less than in 1910. On the other hand, the production of the Gwelo area has advanced by £55,628, from £838,666 to £894,294. Turning now to Mashonaland, it is worthy of special remark that the increase in the output of the Hartley district amounts to £82,696, and is the largest advance for any district of the country. The 1911 output of the Hartley mining field, which has been well described as the home of the small mine, amounted to £621,102. In the Lomagundi area the output was £231,606, or £2,623 less than in 1910. The Mazoe district records an increase of £2,894, and the Salisbury area an advance of £8,049. On the other hand, both the Umtali and Victoria fields declare lesser outputs—the Umtali output being £53,861 less and the Victoria return only £8,792, as compared with £18,463 in the preceding year.

The Chief Producers.

In the following table the outputs of the leading mines of the country during 1911 and 1910 are contrasted. Last year 22 mines declared an output of over £20,000 each:—

Company.	District.	Output, 1911. £	Output, 1910. £	Increase. £	Decrease £
1. Globe and Phoenix	Gwelo	482,616	385,015	97,601	—
2. Giant Mines	Hartley	230,092	141,739	88,353	—
3. Eldorado	Lomagundi	213,550	201,844	11,706	—
4. Wanderer	Gwelo	98,314	74,878	23,436	—
5. Lonely	Bulawayo	91,752	48,806	42,946	—
6. Jumbo	Mazoe	67,584	75,055	—	7,471
7. Selukwe-Columbia	Gwelo	66,257	52,683	13,574	—
8. East Gwanda	Bulawayo	62,582	67,391	—	4,809
9. Rezende	Umtali	56,435	64,033	—	9,027
10. Penhalonga	Umtali	55,008	64,035	—	7,598
11. Gaika	Gwelo	52,298	55,140	—	2,842
12. Etna	Hartley	45,261	43,268	1,993	—
13. Bushtick	Bulawayo	37,806	34,863	2,943	—
14. Queen's	Bulawayo	35,222	29,346	5,876	—
15. Eileen Alannah	Hartley	34,260	32,881	1,379	—
16. Old Nic	Bulawayo	31,930	—	31,930	—
17. Buck's Reef	Bulawayo	30,943	61,369	—	30,426
18. Farvic	Bulawayo	28,613	66,402	—	37,789
19. Battlefields	Hartley	27,916	45,553	—	17,637
20. Criterion	Bulawayo	26,017	—	26,017	—
21. Owl	Hartley	25,559	—	25,559	—
22. Surprise	Gwelo	25,018	30,447	—	5,429

Eldorado Banket.

The secretary of the Eldorado Banket Gold Mining Company issues the following:—"On the instructions of the board, Mr. H. E. Jones, the company's consulting engineer, has within the past few days personally inspected the Eldorado mine, and reports, under date 8th January, that the dyke which had disturbed the parallel reef at the 8th level, has been passed through and the reef met with, having an average value of 8 dwts. per ton over a width of 6 feet. He adds that he expects the reef will improve in value at the 9th level. He also states that a winze sunk from the 8th to the 9th level on the main reef has a present depth of 50 ft. and an average assay value, for the whole depth, of 1 oz. 9 dwts. per ton across a width of 4 ft. 5 ins. after reduction of high values. Mr. Jones states that the reef looks well, that at the bottom of the winze referred to it has a width of 5 ft. and an assay value of 5½ ozs. per ton, and he concludes by saying that the condition of the mine is quite satisfactory." Cablegram giving the return for December:—"Mill ran 29 days—Chilians ran 28 days; tons crushed, 7,339, yielding 2,720 ozs. fine gold; tons cyanided, 7,410, yielding 1,551 ozs. fine gold; total value of yield, £18,174; estimated profit, £10,832." [November profit, £10,149.]

Accumulated Slime Treatment.

In the article on "Treatment of Accumulated Slimes," by Mr. Wm. Bettel, which appeared in our last issue, the word "carcasite" was printed in error for "marcasite," and "prefect" for "perfect."

Reports for English Shareholders.

A Reuter's cable states that satisfaction is expressed that more of the South African mining groups have decided to give ample time to European shareholders to study company reports.

Our Twenty-First Birthday.

Unique Advertising Opportunities.

This year the "SOUTH AFRICAN MINING JOURNAL" celebrates its Twenty-First Birthday.

To mark the occasion a SPECIAL ANNIVERSARY ISSUE which will deal with every conceivable aspect of Mining, Metallurgy, Finance, Engineering, Railways, Harbours and Subsidiary Industries throughout the Sub-continent, will be issued in May next.

The Leading Mining and Financial Men of Europe, Africa and America will contribute to this Special Number, which will Establish a RECORD in South African Illustrated Journalism.

WORLD-WIDE CIRCULATION IS ASSURED.

Do You Wish to Push Your Business?

Apply at once for Advertisement Rates to the

Manager, "S.A. Mining Journal,"

Box 418. **Telephone 913.**

119-126, Exploration Buildings, Johannesburg.

THE ADVERTISING SPACE IS LIMITED AND EARLY APPLICATION IS ESSENTIAL.

RHODESIA'S MINERAL OUTPUT.

Details for December—Gold, Coal and Chrome Iron Production.

We have received from the office of the Rhodesia Chamber of Mines (Incorporated) the following detailed statement of the mineral output for the month of December, 1911, with comparisons and values:—

GOLD.

Note.—All the declarations are in fine gold.

MATABELELAND.

	No. of Stamps.	Tons Treated.	Yield. Ozs.	Value. £
Bulawayo District—				
Agincourt (Est. S. Roodt, deceased) ...	5	357	224.68	944
Alice & Anderson's (Hogg & Barkley)	10	1450	118.65	498
Antenior (E. Granger and Co.)	2	180	50.22	211
Blanket (Willoughby's) (tailings clean up)	—	2850	89.52	376
Bobs (G. Whittington)	3	150	30.97	130
Bridge (Insiza Mines, Ltd.) (tailings)	—	480	25.59	107
Bucks Reef G. M., Ltd. (Bucks and Prestwood)	5	530	217.57	914
Do. (tailings)	—	384	45.18	190
Bulawayo Main A (R. A. Myburgh) (tailings)	—	800	69.90	294
Bushtick Mines, Ltd.	20 2T	3587	310.39	1304
Do. (tailings)	—	2073	395.89	1663
Do. (slimes)	—	1101	151.26	635
Do. (accumulated slimes)	—	1408	55.93	234
"C" (D. & C. Syndicate)	5 1C	1702	137.09	576
Do. (tailings)	—	1289	152.00	638
Do. (slimes)	—	413	157.74	663
Central D.B. (Est. F. C. Smith, deceased) (tailings)	—	200	12.20	51
Charles (W. J. Cooper)	4	330	263.56	1107
Chromate (W. H. W. Butcher)	(5)	133	41.13	173
Do. (tailings)	—	72	2.48	10
Claremont Mines (Rhod.), Ltd.	20	1646	759.91	3231
Column (C. Coleman) (Nov.)	5	50	10.23	43
Coquet (W. H. Robinson) (tailings) ...	—	214	32.90	138
Dick's Luck A (W. H. W. Butcher) ...	(5)	65	10.88	46
Do. (tailings)	—	32	6.00	25
Dolly (N. Lottering)	3	12	5.40	23
Durban D.B. (Henderson & Tosback) (tailings)	—	725	47.19	198
Eagle A (Peard & McDonald & Co.).	5	233	57.87	243
Do. (tailings)	—	198	15.73	66
East Gwanda Mines, Ltd.	60	1914	435.00	1835
Do. (tailings)	—	1260	161.15	677
Ellas (D. Vintcent)	5	100	19.77	83
Ettie (J. P. McCay) (tailings)	—	130	13.20	55
Do. (pannings)	—	—	4.79	20
Do. (clean-up)	—	—	25.20	160
Farvic (Rhodesia, Ltd.)	6 1P	887	379.01	1592
Do. (tailings)	—	525	42.78	180
Do. (slimes)	—	362	61.36	257
Glenmark (A. D. Hall)	5	371	64.37	270
Do. (tailings)	—	400	32.56	137
Intabanenda (Est. B. Smallie, deceased)	5	238	51.73	217
Do. (tailings)	—	158	16.18	68
I.X.L. (Forbes Rhod. Synd., Ltd.) ...	5	718	160.82	675
Lonely Reef G.M. Co., Ltd.	15 2T	2103	839.36	3525
Do. (slimes)	—	2870	1476.92	6203
Mamba (Rowe and Hendry)	5	70	19.16	80
Matabele No. 3 (R. M. Nairn)	5	700	662.61	2783
Do. (tailings)	—	400	60.64	254
Mohem (D. Henchley) (tailings)	—	850	27.11	114
New Eclipse (J. R. Stewart)	4	548	250.71	1053
Do. (tailings)	—	231	27.79	117
New Robin A (E. T. Clayton)	2	40	18.22	77
North and Hanover (Hanover G.M. Co., Ltd.)	5	498	104.31	438
Do. (tailings)	—	240	12.99	53
Northern Star and Kimono (Peel's R. Synd., Ltd.)	10	1043	565.39	2375
Old Nic (Chart. & Gen. E. & F. Co., Ltd.)	10. 2P	1591	547.17	2298
Do. (tailings)	—	984	149.40	627
Pannings (G. B. Peiser)	—		.60	1
Penzance (R. Urquhart)	2	26	8.14	34
Do. (tailings)	—	140	39.91	168
Pioneer (Arbery, Hicks & Foster)... ...	5	271	68.16	286
Do. (tailings)	—	119	14.00	59
Premier (G. Synd.) (clean up)	—	—	6.65	28
Princess (C. A. Abbott)	2	21	16.95	71
Queen's (Matabele Queen's Co., Ltd.)	10	1227	504.55	2119
Do. (tailings)	—	576	84.47	355
Queen's W. Ext. (Cummings & Berry)	3	412	172.28	724
Romola Nigel G.M. Co., Ltd.	5	256	164.75	692
Rose 2 W. (Derry & Tucker) (November and December)	5	466	192.43	808
Smiley D.B. (F. E. Davis)	5	70	41.11	173
Tuff Nut (King's Synd.)	5	425	355.82	1[illegible]60
Do. (tailings)	—	250	56.58	237
Bulawayo District Total			11,490.44	48,229
Gwelo District—				
Ardpatrick (P. S. Warden)	5	530	61.54	258
Arizona No. 2 (A. J. Marchant) ...	5	296	141.82	596
Broad Arrow (Broad Arrow Syn.) ...	10	412	114.93	483
Do. (tailings)	—	300	19.14	80
Bute (T. Pedlow)	5	50	22.21	93
Conqueror (Williams & Woodger)... ...	2	80	67.96	285
Csardas (Wolfshall Syndicate)...	10	502	322.87	1356
Do. (tailings)	—	372	63.84	268
Don No. 1 (Don Prop. Mines, Ltd.) ...	5	250	34.27	144
Dunraven B (New Dunraven G.M., Ltd.)	5	705	149.49	628
Emerald (Sphinx Synd.) (Nov. & Dec.)	2	87	37.99	160
Gaika G.M. Co., Ltd.	5 1C	2573	1117.21	4692
Do. (tailings)	—	1368	131.25	551
Gartly (Mrs. A. G. Grant)	2	35	11.98	50
Globe and Phoenix G.M. Co., Ltd.	40 10P	5363	8697.18	36528
Do. (concentrates)	—	247	597.03	2508
Do. (slimes)	—	2797	353.13	1483
Gold Witch (Gold Witch Synd.)	10	400	74.91	315
Do. (tailings)	—	450	17.97	76
Guinea Fowl (Rhod. M. Trust Ltd.) (November and December)	5	550	90.36	379
Lily (F. Stahnke) (clean-up)	—	—	20.18	85
Murray (T. Fischer) (tailings)	—	450	24.09	101
N'Kanya (L. L. Acutt)	3	33	18.02	76
North Bonsor (Cornish Synd.)	15	1381	229.78	965
Do. (tailings)	—	945	46.86	197
Pretty Polly (New Rhod. R. Co., Ltd.)	5	450	134.47	565
Do. (tailings)	—	350	94.67	398
Prince George (J. H. Veasey)	5	157	39.65	166
Rambler (G. G. Grant)	2	18	6.07	26
Scouts (Don Prop. Mines, Ltd.)	5	484	72.14	303
Sebakwe, D. B. (J. Maleham)	6	140	47.84	201
Selukwe Columbia G.M. Co., Ltd.	1C 3P	2004	793.68	3333
Do. Do. (tailings)	—	1331	146.39	615
Do. Do. (slimes)...	—	744	101.12	425
Surprise G.M. Co., Ltd.	—	—	8.60	36
Wanderer (Selukwe) G.M. Ltd. Wanderer and Camperdown)	4GR	18999	1896.99	8058
Gwelo District Total			15,807.63	66,483

Matabeleland Total ... ... 27,298.07 ozs.
Value £114,712

MASHONALAND.

	No. of Stamps.	Tons Treated.	Yield. Ozs.	Value. £
Hartley District—				
Amaroso (C. H. Wheildon)	5	225	103.13	433
Do. (tailings)	—	136	22.65	95
Arizona No. 2 (Willoughby's Consolidated Co., Ltd.) (tailings)	—	831	112.14	471
Battlefields (Rhod.) Ltd. (Minaar & McArthur)	5 2C	1707	508.07	2134
Do. (tailings)	—	1367	256.21	1076
Do. (slimes)	—	220	19.79	83
Blue Rock (Ellsmoor & Goodyer)	2	150	73.64	309
Do. (tailings)	—	312	82.42	346
Brilliant (Mabel's Luck Synd.)	5	558	313.89	1318
Do. (tailings)	—	333	55.39	233
Brilliant Exten. (C. G. Bennett) (tailings)	—	900	52.32	220
Butterfly 1 N.E. (N. A. Arnold and Central M. and I Corp., Ltd.)	5	145	105.25	442
Cam & Motor G.M. Co., Ltd. (October and November)	—	565	148.11	626
Cam & Motor G.M. Co., Ltd. (December). Ball mill, roaster and cyanide)	—	389	226.40	957
Canary (E. Brayshaw) (clean-up) ...	—	—	4.98	21
Concession & W. Ext. (C. E. Simpson)	5 1C 2P	2977	633.87	2662
Crown No. 2 (Crown Synd.)	2	250	49.73	209
Do. (tailings)	—	200	52.63	221
Dalny (P. Wiggins)	5	819	84.47	355
Do. (tailings)	—	325	73.87	310
Dreadnought (W. E. Masters)	1C	757	51.88	218
Duke (J. Bertelsen)	3	22	36.48	153
Eiffel Blue & E. Ext. (Willoughbys Con. Co., Ltd.)	10	1390	767.07	3222
Do. (tailings)	—	750	67.73	284
Eiffel Blue Ext. (Eileen Alannah) ...	10	1566	740.53	3110
Giant Mines of Rhodesia, Ltd.	30 2T	11000	4335.66	18390
Glasgow (Glasgow Mines, Ltd.)	5	286	80.69	339
Glencairn No. 3 (Glenrosa Synd.)... ...	4	450	548.34	2303
Do. (tailings) ... ...,	—	1288	104.78	440

	No. of Stamps.	Tons Treated.	Yield. Ozs.	Value. £
Glendarra (F. J. Nalty) (tailings) ...	—	780	62.91	264
Golden Valley (J. Mack)	5	421	159.47	670
Do. (tailings)	—	210	52.27	220
Goldmore (B. Secretan)	2	200	40.96	172
Do. (tailings)	—	130	23.57	99
Goodsman (W. M. James)	2	118	169.91	714
Do. (tailings)	—	240	40.97	172
Heathfield (D. M. McBarnet)	5	290	86.33	363
Do. (tailings)	—	84	15.80	66
I.X.L. (Heroine G.M. Co., Ltd.) ...	2	225	52.52	221
Just-in-Time (Colliver and Paylor) clean up	—	—	1.15	5
Little Kitty A (A. Buchanan) clean-up	—	—	8.51	36
Mali (McAdams & Harrill)	2	75	57.23	240
Masterpiece G.M. Co., Ltd.	5	700	285.54	1199
Do. (tailings)	—	320	47.93	202
Oleander G.M. Co., Ltd.	3	222	239.65	1007
Do. (tailings)	—	222	115.50	485
Owl (Rolfe and Seear)	5 1H	965	487.48	2047
Do. (slimes)	—	787	199.70	839
Paddy's United (Oct. and Nov.) Siggins and Walker) clean-up	—	—	12.08	51
Do. (tailings)	—	160	18.84	79
Pickstone, & 1 W .(S. L. Syndicate).	4	549	134.23	564
Do. (tailings)	—	367	37.67	158
Pool (Pool Syndicate)	5	54	26.91	113
Ronge, 1 N (S. Rhod. M. Synd.) ...	5	470	137.00	582
Do. (tailings)	—	321	88.00	374
Shepherds (Phoenician Syndicate) ...	5	580	207.64	872
Do. (tailings)	—	160	81.23	341
Stanley (Barrass & Allen) (tailings) ...	—	95	11.08	47
Thistle-Etna G.M., Ltd.	1C	2000	829.32	3482
Do. (tailings)	—	1824	217.00	911
Do. (slimes)	—	660	113.44	477
Turkois (R.E. & D. Co., Ltd.)	5	403	60.70	255
Washington (I. J. Minaar)	5	400	295.94	1243
Do. (tailings)	—	300	32.24	135
Whistlecock, 1 W (T. McDowell)... ...	2	150	37.50	157
Do. (tailings)	—	110	34.11	143
Hartley District Total			14,234.45	59,985
SALISBURY DISTRICT—				
Abercorn (J. Seton Rogers) (tailings)	—	200	10.48	44
Mont d'Or (Claxton and Bussell).. ...	D	35	109.71	461
Old Loyalty (Shamva Ilex G.M. Ltd.).	5	160	43.49	183
Do. (tailings)	—	662	59.80	251
Radnor (Jones and Wyllie)	3	100	82.07	344
Salisbury Total			305.55	1,283
LOMAGUNDI DISTRICT—				
Broken Hill (Sceptre Syndicate)... ...	1 P	660	90.46	380
Eldorado Banket G.M. Co., Ltd. ...	2C 20	7339	2720.27	11536
Do. (tailings)	—	7410	1551.47	6580
Kia-Ora (Flowers and Brittain)	—	400	46.10	194
Lone Hill 1 (Day and Hallward)... ...	2	60	35.54	149
Shankuru (Harries and Anderson) ...	2	131	69.57	292
Lomagundi Total			4,513.41	19,131
MAZOE DISTRICT—				
Hay G.M. Co., Ltd.	10 1T	2175	338.73	1436
Do. (tailings)	—	2175	396.99	1683
Honest (G. Brown)	3	107	21.60	91
Jumbo G.M. Co., Ltd.	30	3400	751.44	3194
Do. (tailings)	—	2150	419.58	1783
Do. (slimes)	—	1250	134.42	572
Mickey (B. G. Byerley)	2	118	118.40	497
Umkulu D.B. 1W (Llaksram Synd.) ...	D	—	26.24	110
Mazoe Total ... ... ,			2,207.40	9,366

ECONOMY IN FUEL.

Users of coal for domestic, business or steam-raising purposes are now recognizing the saving of time and money effected by using only the best Transvaal coal and this coal is mined from the Vaalbank (Middelburg) Colliery.

This coal, which can be obtained at about the same price as inferior coal, gives the highest heating value of any Transvaal coal, burns regularly and gives a minimum of ash or soot, and the fact that a trial order is always followed by repeat orders confirms the favourable opinions expressed by the present users of the coal.

Supplies of Vaalbank coal can be obtained from:—Johannesburg—A. E. Dunstone, Box 5034; The Holmes, Darcy Coal Agency, Box 5176; Benoni—Lindsay & Pirie, Box 5; Unsted & Holland, Box 316; Webb & Co., Box 370; Boksburg—J. D. Campbell, 105, Commissioner Street; Germiston—C. A. Margach, Box 223; Heidelberg—L. Lowenstein, Box 175; Bloemhof—J. Leviton; Kimberley—A. G. Freeman, Box 154; Pretoria—R. Butler & Co, Box 747; J. Franklin, Box 51; Middelburg—H. Laver & Co., Box 94; Lydenburg—M. McGee, Box 24; Pilgrim's Rest—J. H. Alcock, Box 36; Barberton—D. Wasserberg & Co., Box 167; Delagoa Bay—I. Sangiorgio-Borruso, Box 366; Pietersburg—B. Herman, Box 36.

	No. of Stamps.	Tons Treated.	Yield. Ozs.	Value. £
UMTALI DISTRICT—				
Bartissol 1 D.B. (Umtali W. Synd.) ...	10	170	4.96	21
Bromley (Umtali Waterfall Synd.) ...	(10)	114	17.33	73
Do. (tailings)	—	140	13.68	57
Elgin Do. Do.	(10)	162	51.05	214
Do. (tailings)	—	62	8.95	38
Do. (slimes)	—	80	5.45	23
Golden Gate 1E (Sussen Synd.)	5	250	22.05	93
King's Daughter (Umtali W. Synd.) (slimes)	—	298	22.90	96
Liverpool (Anderson & Snodgrass).. ...	5	700	74.96	315
Do. (tailings)	—	260	37.03	156
Penhalonga Mines, Ltd.	45	5100	435.34	1847
Do. (Concentrates)	—	112	460.80	1912
Rezende Mines, Ltd.	35	3500	623.13	2644
Do. (tailings)	—	2524	294.96	1252
Do. (Concentrates)	—	48	163.80	691
Rezende 1 W. A. (Imbeza Synd.) ...	10	3613	325.87	1383
Do. (Concentrates)	—	5	61.74	260
Umtali (Umtali Waterfall Synd.)... ...	10	544	130.64	549
Do. (tailings)	—	486	38.64	162
Village (Village G.M. (Rhod.) Ltd.) ...	5	109	37.05	156
Do. (tailings)	—	602	48.11	202
Umtali Total			2,878.44	12,142
VICTORIA DISTRICT—				
Cambrian (Hodges & McClelland) ...	10	950	30.50	128
Do. (tailings) (clean-up)..	—	600	22.03	93
Matabele (M. S. Sarluis)	3	68	18.49	78
Texas (J. J. Kostlick) (clean-up)	—	320	25.80	108
Victoria Total			96.82	407

MASHONALAND TOTAL ... ..., ... 24,236.07 ozs.
VALUE ... ... £102,314.

GRAND TOTAL ... ... 51,534.14 ozs.
VALUE £217,026

SUMMARY.

Gold.	Ozs.	Value.
Matabeleland	27,298.07	£114,712
Mashonaland	24,236.07	102,314
Total	51,534.14	£217,026
Silver	14,613.07 ozs.	£1,506
Lead	1,736 tons	3,875
Chrome Iron	46.94 tons	638
Coal	18,329 ,, (sales)	8,272
TOTAL VALUE DECEMBER OUTPUT		£231,317

THE STOBIE PATENT RESPIRATOR

Only weighs half an ounce. Cheapest, most effective and comfortable in the market.

Order wholesale from Stobie Company (Ltd.), Box 2321, Johannesburg, or retail locally through your chemist.

Miners' Phthisis prevented by the use of Stobie Respirator.

LITERATURE FOR

MINING CAMPS.

MINE READING ROOMS should send direct to London for their Literary Books and Periodicals, or for Technical Books for individual use. List of Rates of Subscription for 1,500 Periodicals; also complete Book Catalogue of 180 pp. post free.

Colonial Librarians' Handbook free on application.

SPECIALITY: Colonial Editions of Fiction.

Remit direct, or through your London Office at choice.

ALFRED WILSON, Export Bookseller,

18-19 Gracechurch Street, LONDON, E.C.

(Established 1851.)

Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

An Inventor's Enquiry.

To the Editor, *South African Mining Journal.*

Sir,—I have invented an apparatus which I think will do away with Miners' Phthisis caused through the dust from rock drills, and shall be greatly obliged if you will let me have the name and address, should you know anyone interested in this matter, a mechanical engineer preferably. I know no one in Johannesburg interested in this subject, and should like to have someone's opinion as to its merits. Thanking you in anticipation, I am, etc.,

R. O. PICKIN.

Box 4071, Johannesburg, 31st January, 1912.

Ventilation on Mines.

To the Editor, *South African Mining Journal.*

Sir,—Much has been said about the ventilation on the mines along the Rand, and yet, on the whole, the Rand mines are badly ventilated. On the outcrop mines, since they are more or less either practically worked out or completely developed, it is found that natural ventilation is at present efficient. When, however, we consider the deep level and deep deep level mines, ventilation is in many cases extremely bad. Natural ventilation in these cases is not sufficient, and some other method must be resorted to. But since the amount of oxygen per unit underground does not appear to be a great consideration, it is apparent that mine owners and managers do not regard it as essential that additional expenditure in installing fans or other mechanical devices should be resorted to. One reason why fans are of such rare occurrence is that the Rand mines are not suitable for conducting the air all over the workings, unless an elaborate system of bratticing is resorted to. This method necessitates a heavy expenditure, especially when the current requires to be taken down a shaft to levels unconnected with up and down-cast shafts; another and more important reason is the consideration of working costs. Every manager has one object in view, *i.e.*, to reduce his working expenditure to a minimum, and he is consequently loth to introduce anything that will constitute a current expense.

Even if the ventilation be almost perfect it will be found incapable of covering the whole underground area, and the dust question will remain much the same; assuming that this could be done away with during the process of drilling, there yet remains the scourge of the dust caused through blasting operations, in addition to the fumes caused thereby. Both the above dangers may be practically done away with by what may be termed "local ventilation," *e.g.*, the cutting of a chamber at every station, preferably in the shaft pillar on the cage side. In this chamber, which is closed off by an ordinary door, compressed air from small pipes is allowed to escape slowly; the escape of the compressed air will produce a gentle outward current which will supply those men inside with fresh air and prevent any dust or fumes from entering the chamber. After each blast the men may enter the chamber while waiting for the cage, and during their stay there, even at the lowest development levels, there is accommodation at as near surface conditions as can possibly be attained underground. The advantages of such a chamber are numerous. As shown above, the men will be absolutely free of dust while waiting at the station, which, when it is considered that waits of half-an-hour are of frequent occurrence, has no inconsiderable bearing on the phthisis danger. These waits are made in a polluted atmosphere, the men inhale a great quantity of fine dust and injurious fumes, and, as a matter of fact, it is possible that during these waits more dust is inhaled than during the whole working shift. At all events, we may with safety say that 50 per cent. of the dust breathed and inhaled by men is that produced by blasting, and if we can save the workers from regularly inhaling this amount we shall in all likelihood do away with a number of cases of phthisis. In addition to ridding themselves of the quantity of dust, the men are also saved from inhaling the fumes produced by explosions, which naturally assist the dust in its havoc.

Another instance in which a chamber of the nature described above will be most beneficial is in the event of explosives catching alight. In that case the men at once have a safety resort where they can conveniently wait until the skip arrives, or where they can, with safety, remain until the fumes are dissipated. Compressed oxygen might also be kept in this chamber for immediate administration in cases of gassing. The primary objection by many companies will likely be the expense of cutting the chambers at each level, but this may be effectively dispelled on a consideration of the actual cost.

Say a chamber of the dimensions, 7 ft. x 10 ft. x 10 ft.—sufficiently large enough to accommodate the workers on any level—was arranged for, and let at a contract price of sixpence (9d.) per cubic foot—£27 15s.; the cost of putting in a door, air pipes, seats, etc., etc., say an additional £10—so that the chamber will cost about £37 15s. The above rough calculation shows that there is no heavy expenditure connected with the above suggestion. Even the small amount thus incurred will, in course of time, be saved over and over again on insurance payments and other monies paid out in cases of accident and phthisis; the chambers will thus not only prove to be health resorts, but also of economic importance.—I am, etc.,

D. G. MALHERBE.

Geldenhuis Deep, Feb. 1.

MINING MEN AND MATTERS.

Mr. E. W. Clifford takes over the management of the Modder "B" next week. Mr. Ralph Martin, who has for some time past been manager of the mine, and recently returned from leave, is advised not to go underground for a period of twelve months on account of his health, and he has accordingly been transferred to the head office.

* * * *

His many friends on the Rand will be glad to learn that Mr. Frank Harvey, Chairman of Messrs. Harvey & Co., and the Dolcoath tin mine, will pay a visit to the Rand next month.

* * * *

Mr. James Gray, F.I.C., has severed his connection (extending over a period of six years) as chief assistant to Mr. A. Heymann, analytical and consulting chemist, Johannesburg, and has opened a laboratory on his own account at 68 Main Street. A fully equipped laboratory and assay office, suitable for the carrying out of all branches of chemical and metallurgical analysis, analysis of foods and drugs, waters, coals, gases, etc., etc., has been established, and all work submitted will receive his personal attention.

S.A. Gold Trust.

A Reuter's cable says the report of the South African Gold Trust for the year ended December 31 last shows a net profit of £107,976. A final dividend of 2s. per share has been declared, making a total of 3s. 6d. for the year, and £88,804 carried forward.

DECEMBER GRADE, COSTS AND PROFITS.

Analysis of the Gold Production for the Month.

The usual monthly analysis of the gold production for December, issued by the Chamber of Mines, is presented hereunder :—

THE WITWATERSRAND.

	Total value recovered.	Value recovered per ton milled.		Total working cost per ton milled.		Total working costs.	Working profit.	Working profit per ton milled.	
	£	s.	d.	s.	d.	£	£	s.	d.
1. Aurora West United ...	13,627	24	8	19	0	15,518	3,091	5	7
2. Bantjes Consolidated ...	35,316	30	1	25	5	29,215	5,607	4	10
3. Brakpan Mines	57,251	28	7	18	3	36,603	20.114	10	(
4. Champ d'Or	6,533	15	9	17	0	4,966	1,512	†5	2
5. Cinderella Cons.	22,900	28	8	24	7	19,676	3,245	4	1
6. City Deep	64,744	34	11	24	5	45,221	18.882	10	2
7. City and Suburban ...	43,883	35	11	22	2	26,698	17.000	14	2
8. Cons. Langlaagte	26,829	22	5	18	3	18,993	7,835	7	6
9. Cons. Main Reef... ...	24,276	31	2	22	11	17,222	6,500	8	8
10. Crown Mines	244,002	35	9	19	6	131,776	107,200	15	10
11. Durban Roodepoort ...	15,050	21	3	15	4	10,887	4,160	5	10
12. Durban Rood. Deep ...	32,907	28	7	23	7	26,352	6,193	5	7
13. East Rand Prop.	239.534	28	9	19	4	157,483	78,992	9	8
14. Ferreira	36,291	28	7	17	0	20.277	13,366	11	3
15. Ferreira Deep	62,726	44	2	23	2	32,896	29.257	20	7
16. Geduld Prop.	17,747	27	1	22	4	14,283	3,387	5	4
17. Geldenhuis Deep	86,148	29	0	23	2	68,041	17,029	5	10
18. Ginsberg	18,367	29	3	20	8	12,956	5,406	8	7
19. Glencairn Main Reef ...	15,827	14	7	13	2	13,023	2,803	2	10
20. Jubilee	68	—		—		—	—	—	
21. Jumpers-cum-Treasury	16,948	32	2	30	1	15.252	1,508	3	0
22. Jupiter	32.351	21	1	18	7	28,576	3,343	2	2
23 Knight Central	30,082	22	0	17	4	23,430	6,200	4	7
24. Knights Deep	54.320	17	6	10	9	33,362	20,249	6	6
25. Lancaster West	23.783	21	1	19	8	21,652	2,600	1	10
26. Langlaagte Estate ...	57,807	20	6	—		—	14,000	5	6
27. Luipaardsvlei	17,004	17	6	16	5	14,048	1,964	2	4
28. Main Reef West	23,244	33	10	23	2	15,496	7.278	10	11
29. May Consolidated ...	18,728	25	0	14	5	10.580	8,024	10	11
30. Meyer and Charlton ...	25,801	37	3	17	1	11,798	14,008	20	3
31. Midas Deep	1,555	15	2	—		—	—	—	
32. Modderfontein B ...	52,481	34	4	19	4	29,621	22,199	14	6
33. New Goch	32,920	21	0	15	11	25,036	7,769	4	11
34. New Heriot	22,373	39	0	22	4	12,329	9,911	18	0
35. New Kleinfontein ...	56,482	30	5	19	4	35,916	20,114	10	10
36. New Modderfontein ...	81,360	30	8	17	0	44,800	35,550	13	6
37. New Primrose	33,498	27	2	14	6	16.986	16,513	14	2
38. New Rietfontein	21,370	26	3	22	4	18,043	3,328	4	1
39. New Unified	15,899	31	1	22	11	11,239	4,662	9	6
40. Nourse Mines	73,724	31	8	23	6	54,085	18,985	8	3
41. Princess Estate	12,522	19	11	26	9	16,860	*4,369	*6	11
42. Randfontein Central ...	255.208	24	1	—		—	74,000	7	1
43. Robinson	113,746	46	9	15	7	37,948	74,761	30	8
44. Robinson Deep	77,198	34	3	18	2	40,708	35,031	15	7
45. Roodepoort United ...	32,852	22	8	17	1	34,738	8,042	5	6
46. Rose Deep	89,028	28	11	17	7	54,272	33,955	11	0
47. Salisbury	5,420	15	6	16	6	5,788	*446	*1	3
48. Simmer and Jack ...	78,018	23	8	12	8	41,402	36,006	11	1
49. Simmer East	24,998	16	7	15	10	23,946	738	0	6
50. Simmer Deep	42,431	17	11	16	1	38,013	3,538	1	7
51. Spes Bona Tribute ...	6,236	22	4	—		—	—	—	
52. Van Ryn	54,074	27	4	14	10	29,363	25,041	12	8
53. Village Deep	69,021	28	10	19	2	45,868	22,456	9	4
54. Village Main Reef ...	74,773	42	3	20	4	35,375	37,477	21	7
55. Vogelstruis Estate .	11,800	21	3	22	0	11,218	603	1	2
56. West Rand Central	3,615	32	6	26	7	2,958	657	5	11
57. West Rand Cons. .	33,842	22	9	19	3	28,597	5,146	3	6
58. Witwatersrand	39,453	25	0	16	4	25,726	13,727	8	8
59. Wit. Deep	53,135	27	4	18	5	35,737	16,652	8	7
60. Wolhuter	41,020	27	3	16	9	25,129	15,215	10	2
Miscellaneous producers	17,874	—		—		—	—	—	
Witwatersrand totals	2,891,780	27	10	18	5	—	967,897	9	7
				57 cos.			57 cos.	57 cos.	

†The apparent discrepancy between grade, costs and profit arises from profits from treatment of accumulated slime.

*Loss.

The apparent small disagreement between working costs and profits per ton milled and value per ton is due to inclusion of value won from accumulations and by-products.

OUTSIDE DISTRICTS.

	Total value recovered.	Value recovered per ton milled.		Total working cost per ton milled.		Total working costs.	Working profit.	Working profit per ton milled.	
	£	s.	d.	s.	d.	£	£	s.	d.
HEIDELBERG—									
1. Nigel	20,079	27	1	24	0	17.047	2,804	3	11
2. Sub Nigel	8,453	40	9	36	6	7,576	767	3	8
BARBERTON—									
3. Barrett	884	6	10	—		—	—	—	
4. Sheba	11,486	39	1	—		—	—	—	
5. Sheba (Rosetta)	1,725	18	8	—		—	—	—	
6. Worcester	4,791	20	2	—		—	—	—	
KLERKSDORP—									
7. New West Bonanza ...	3,776	32	10	—		—	—	—	
LYDENBURG—									
8. Glynn's Lydenburg ...	6,699	47	8	19	1	2,677	3,878	27	6
9. Transvaal G.M. Estates	29,318	49	0	22	2	13.268	15,799	26	5
Miscellaneous producers	36,508	—		—		—	—	—	
Total (outside districts)	123,719	34	3	24	6	—	23.248	14	0
				4 cos.			4 cos.	4 cos.	
Grand totals	3,015,499	28	0	18	6	—	991,145	9	8
				61 cos.			61 cos.	61 cos.	

A comparison of value recovered per ton milled, working costs and profits per ton with November shows that the value recovered on the Witwatersrand for December was 27s. 10d. or 4d. per ton more than for November. Working costs were 18s. 5d. as against 18s. 3d. for November. In the outside districts the total tonnage milled in December was 50.280 tons, making a total for the Transvaal of 2,080,717 tons.

The working profits declared for the Transvaal since the commencement of 1910 are :—

	1910.	1911.	Inc.	Deo.
	£	£	£	£
January	952,001	954,536	2,535	
February	900,269	898,738		1,538
March	939,127	973,470	33,343	
April	955,240	1,000,043	44,803	
May	990,607	981,788		8,819
June	955,170	987,557	32,387	
July	972,563	998,340	25,677	
August...	991,707	996,072	4,365	
September	974,362	979,328	5,006	
October	981,991	974,236		7,755
November	977,120	990,617	13,497	
December	976,942	991,145	14,203	
Totals	£11,567,099	11,725,897		

East Rietfontein Syndicate.

The eighth ordinary general meeting of shareholers in the above syndicate was held last week at the Consolidated Gold Fields Buildings, Simmonds Street. Mr. F. D. P. Chaplin, M.L.A., presided. The representation was £8,541. There were present Messrs. D. Christopherson, F. L. Brown, W. S. Smits, D. W. Rossiter, J. E. Kent, M. G. Elkan, H. W. Anderson and J. D. Low (secretary).

The Chairman said : There is little to add to the information contained in the report of the directors and accounts now before you. You were informed last year that before the land settlement scheme referred to in last year's report could be carried into effect an alteration in the articles of association would have to be made. This alteration was duly made at a special meeting held on the 1st June, and confirmed on the 23rd June, and advantage was taken at the same time of the opportunity to amend the articles of association to bring them into conformity with the Companies Act, 1909. The settlement scheme, however, still remains in abeyance, owing to the fact that, as the Township Law now stands, the division of the farm into more than fifteen lots would constitute the creation of a township, and all mineral rights under the township would thereupon pass to the Government. As the Government have published the draft to a Consolidating Township Bill, it is hoped that this provision may be modified during the coming session of Parliament. The report was adopted. The retiring directors—Messrs. F. D. P. Chaplin, J. Friedlander, D. Christopherson, H. Neuhaus, W. Hume, and Sir E. H. Dunning—were re-elected. Messrs. T. Douglas and W. M. Brown were re-elected auditors.

THE WEEK IN THE SHAREMARKET.

An Improvement—Several Stocks Better—Closing Quiet.

A DISTINCT turn for the better was seen in the market this week. The improvement was led by Neumann stocks, and extended practically to the whole list. Towards the end of the week, however, the firmness was only just maintained, and it may be that the spurt is of the passing variety. At any rate it may serve as a warning to the "bears." Diamond shares are likely to improve on the issue of the good Premier report and balance sheet. Tins are a trifle firmer, having recovered from the "bear" attack, but it is plain that little activity may be expected in them for the moment. The outlook is distinctly better, but we are not yet out of the doldrums.

* * * *

At the recent meeting of the Rhodesia Exploration Company the directors had no difficulty in carrying their proposals for the amalgamation of the company with the Gold Fields Development concern, and, on the whole, the fusion is regarded as of good augury for the Rhodesian market. That the controversy concerning the relative assets positions of the companies will continue to rage is, however, likely enough. Some figures compiled by the Chartered Company show that Rhodesian mining enterprise must, at last, be taken seriously, for the dividends paid in respect of 1911 from mining companies amount to £600,000, an increase of £120,000 as compared with 1910. In London Chartereds, themselves, have been freely dealt in, though on balance the change in the quotation is merely fractional. A drive was at one time directed against Eldorado, but the shares recovered sharply on the encouraging cable from the consulting engineer. The main reef is going down strongly at depth, assays showing 1 oz. 9 dwts. across 4 ft. 5 ins. Good news has come to hand respecting the development work at the Lonely, while the Willoughby Company's promising mine, the Eileen Alannah, reports assays of over 25 dwts. over 6 ft. The Giant return for December was quite satisfactory, 11,000 tons being crushed for a yield of 4,260 ozs. Shamvas and Falcons have been easier, but apparently without special reason.

* * * *

	Friday, 26th.	Sat., 27th.	Monday, 29th.	Tuesday, 30th.	Wed., 31st.	Thurs. 1st.
African Farms ..	16 3S	13 3B	16 3B	13 3S	16 6B	16 9
Aurora West ...	7 6B	...	...	7 6B	..	...
Adair-Usher Process	...	...	2 0B	1 9B	..	...
Apex Mines ...	...	...	32 6	31 0B	32 6B	32 6B
Bantjes Consolidated	23 9	24 3	24 6	24 3	24 9	25 0B
Benonis	10 6B	10 3B	10 3B	10 3B	10 6B	10 3B
Blaauwbosch ...	17 0B	...	15 0B	...	...	...
Bushveld Tins ...	...	0 9B	...	0 10S	0 7B	0 6B
Brakpan Mines ...	49 0B	49 0B	...	49 6B	50 0B	50 0B
British S.A. ...	...	...	...	...	27 6B	...
City and Suburban ...	48 3B	48 6	48 3	47 9	48 3B	48 0
City Deeps	50 0B	50 0B	49 6B	49 0B	50 9	51 0
Cloverfield Mines ...	3 10	3 9B	4 11	3 9B	4 0B	4 0
Cons. Langlaagtes ...	18 9B	18 6B	18 3B	18 3	18 9B	19 0
Cons. Main Reefs ...	16 0B	16 3	16 3B	16 9B	17 3	18 6
Crown Mines ...	...	125 0B	127 0B	125 0B	126 0S	126 0B
Clydesdales	10 0B	10 0B	..	...	10 0B	10 0B
Coronation Freeholds	.	0 6B	0 6B	0 6	0 6B	0 7B
Concrete Cons. ...	...	10 0B	...	...	..	...
Con. Investment ..	...	21 0B	...	..	...	...
East Rand Cent. ...	7 6B	7 9B	7 9B	7 9B	7 9	8 0
East Rand Coals ...	2 4B	2 4B	2 4B	2 4B	2 4B	2 6
East Rand Deeps ...	1 9B	1 6B	...	..	2 0S	...
East Rand Props. ..	64 6S	65 0	.	...	64 0B	64 6B
East Rand Deb. ...	£96½B	..	£96¾S	£96B	£93B	£96
Eastern Gold Mines	1 10B	1 10B	1 9B	...	...	...
Govt. Areas... ...	21 0S	21 3B	21 6S	21 6B	22 6	22 6
Glencoe (Natal) Colls.	...	5 9B	5 9B	...	...	...
Glynn's Lydenburgs	38 0S	37 0S	37 6S	36 3	38 0S	35 6S
Geldenhuis Deeps ...	...	40 0B	40 0B	...	..	..
Glencairns	...	4 0B	4 0B	..	..	...
Jumpers	16 0S	..	14 0S	16 0S	16 0S	...
Jupiters	7 6B	7 6B	7 9B	8 0S	...	...
Kaalfontein Diamonds	0 6B	0 6B	0 6B	0 6S	0 6B	0 6B
Klerksdorp Props. ...	3 0B	3 0B	3 0B	3 0B	...	3 5B
Knight Centrals ...	14 9B	14 9B	15 0B	14 9B	15 0B	15 3B
Lace Props.	2 9B	2 6B	...	2 9B	2 9B	2 9S
Lydenburg Gold Farm	8 3B	8 3S	8 3B	8 3B	8 4B	8 3B
Main Reef Wests ...	25 6B	25 9B	26 0B	23 9B	27 6	29 6
Modder B's	52 0	52 3	...	51 6B	52 6B	53 0B
Midas Deeps ...	1 0B	1 1B	1 1S	1 1S	1 2S	1 2B
Middelvlei Estates...	1 7S	1 6B	1 6B	1 9B	...	1 9B
New Eras	6 0B	6 0B	6 0B	5 9S	6 0B	6 0B
New Kleinfonteins ..	28 0B	28 0B	28 0B	28 3B	28 6S	29 0
New Rietfonteins ...	10 9S	10 0	10 9	10 6S	10 6	11 6
New Heriots ..	96 0S	...	...	96 0S	95 0S	...
New Unifieds ...	19 0S	19 0S	...	19 0S	19 0S	19 0S
New Boksburgs ...	2 0S	...	2 0S	2 0S	2 9S	...
New Primrose ...	39 0S	...	...	...	...	...
Orange Diamonds ..	1 7B	1 8	1 9B	1 11	1 11B	1 11B
Pretoria Cement Co.	54 6B	...	...	...	54 0B	52 6B
Premiers Preferred	...	..	170 0B	...	170 0B	...
Rand Nucleus ...	...	...	2 6B	..	2 9S	2 9B
Randfontein Estates	32 3B	32 0	32 0	32 0	33 0	33 0
Rooiberg Minerals ..	26 0	25 0B	25 3B	26 0	25 6B	26 0S
Rand Klip	3 4B	3 9B	3 9B	4 0	3 10B	3 11B
Roberts Victors ...	20 6S	...	...	...	...	...
Rood. U.M.R. ...	24 0S	...	24 0S	...	...	20 0B
Rood. Durban Deeps	25 3B	26 0B	27 0	26 6S	26 6B	27 6B
Randfontein Deeps ..	4 9B	4 0S	4 9S	...	4 6S	5 0S
Ryan Nigels ..	...	4 0B	...	...	4 0B	4 0B
Rand Collieries ..	...	...	5 4B	5 6B	..	...
Simmer Deeps ...	4 0B	...	4 6S	3 10	3 11B	3 6B
South African Lands	4 0	4 1B	4 1	4 0	4 0B	4 1B
S. Randfontein Deeps	2 9B	2 6B	2 9	2 6B	2 7	2 4B
Sub Nigels	6 6B	...	..	6 3B	6 6B	6 6B
S. A. Breweries ...	...	..	40 0B	40 0S	40 0S	40 0S
Springs Mines ...	8 0S	6 6B	8 0S	7 6	7 9S	7 9B
Swaziland Tins	...	...	32 6B	32 6B	32 6B	35 0B
Simmer Easts ...	0 3S	0 3S	...	...	0 3S	...
S.A. Tin Mines ...	.	..	7 6S	7 6S	7 6S	2 6B
Trans. G.M. Estates	46 0B	45 0B	46 6	46 6B	45 0B	...
Temple Tins ...	...	2 9B	2 9B	...	2 9S	...
Trans. Coal Trusts...	...	32 6B	32 6B	33 0B	33 3B	34 0B
Van Ryn Deeps ...	7 9B	7 9B	7 9B	7 9B	7 9B	7 9B
Village Deeps ...	41 9B	41 0B	41 0B	40 9S	41 6B	41 9B
Vogel. Cons. Deeps...	1 6B	1 6B	1 6B	1 6B	1 6	1 6B
Voorspoed Diamonds	16 3B	...	16 3B	...	...	...
Witbank Collieries...	44 0S	...	41 0B	44 0S	44 0S	6
Wolhuters	22 6B	22 9B	22 6B	22 6B	22 9B	22 9B
Wit. Deeps ...	50 6B	50 0B	49 6B	..	50 0B	53 0B
West Rand Con. ...	10 6B	..	...	...	10 0B	...
Zaaiplaats ...	73 0S	72 0B	72 0B	...	73 6S	70 0S

B Buyers. S Sellers.

B Buyers. S Sellers.

New Heriot.

At the New Heriot mine during the December quarter, 34,790 tons were milled, and gold recovered to the value of £68,903, including sundry revenue, £344. The recovery per ton was 39s. 7.333d., working costs were £38,354, or 22s. 0.588d. per ton, and working profit was 17s. 6.745d. per ton, or £30,549. Capital expenditure amounted to £1,699. Gold in reserve at December 31, was 1,266 ozs.

WANTED.

First-class man to take charge of Cyanide and Assay work for five-stamps proposition up-country. Starting salary £30 per month. Apply with copies of testimonials to CYANIDE c/o South African Mining Journal, P.O. Box 963, Johannesburg.

"SISKOL"

STOPE-DRILLS.
HAMMER-DRILLS.
COAL-CUTTERS.
AIR-COMPRESSORS.

We are always willing to Send Our ***DRILLS*** *Out on Trial.*

THIS SPEAKS FOR ITSELF.

WRITE OR PHONE US.

International Channelling Machines, Ltd.,
(INCORPORATED IN ENGLAND)
2 & 3, TRUST BUILDINGS, JOHANNESBURG.
Phone 2643. **Telegrams "SISKOL."** **P.O. Box 1382.**

The 1336 Type Metal Set Closed

Western Electric
Mine Telephones

are a combination of the celebrated "Bell" Telephone Apparatus and specially designed protective cases making the most practical, durable and efficient mine telephones in the world.

THEY ARE FIRE, MOISTURE AND RUST PROOF.

The apparatus inside the set is doubly protected from moisture, acid fumes and gases by two iron doors. Even when in use only one of these doors is open, and when not in actual service both doors are closed.

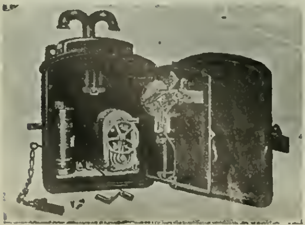
But iron doors alone are not depended upon for protection. The windings of the receiver, bell coils and induction coils are specially treated with a compound for added protection, and all the interior wiring is rubber covered and formed into cables to prevent injury.

You can depend upon these telephones in emergencies. Nothing has been left undone to make these sets absolutely reliable.

Write for Bulletin No. 1110, to the

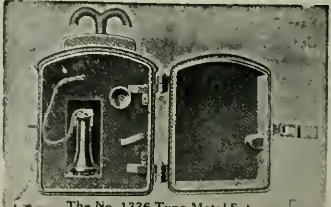
WESTERN ELECTRIC CO., LIMITED

(Incorporated in England.)



17, Standard Bank Chambers,
JOHANNESBURG.

Tel. Add.: "MICROPHONE." **Box 1571.**
PHONE 2118.



The No. 1336 Type Metal Set with Outer Door Open

Engineering Notes and News.

Power Transmission by Ropes.

A particularly useful and instructive epitome of lectures upon the subject of "The Transmission of Power by Ropes," as delivered before engineering and kindred societies in connection with universities, technical colleges, and other institutions throughout the United Kingdom, has been prepared by Messrs. William Kenyon and Sons, Ltd., Chapel Field Works, Dukinfield, near Manchester. In an industrial field such as this, where power transmission is a subject of constant and serious thought, the mechanics and efficiencies of rope drives are, naturally, matters of no small interest, and there are probably few pamphlets, if any, which cover the question in both its aspects so comprehensively and concisely as does the little work issued by Messrs. Kenyon. It is abundantly illustrated with lucid diagrams and well-chosen photographs of rope-driven plant, and is concluded with a brief chapter, with descriptive figures, on the art of rope splicing. We feel that we are doing engineers a service by drawing their attention to the merits of the compilation. Fig. 1 represents the inside of a strand of Kenyon's Cotton Driving Rope, displaying the even lay of the yarns. Fig. 2 shows the crinkled character of ordinary ropes made by other methods, which leads to undue stretching.

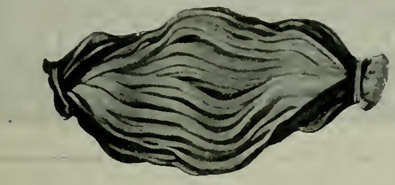


Fig. 1.

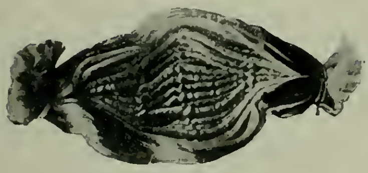


Fig. 2.

Standard Specifications for Railway Rolling Stock Materials.

The Engineering Standards Committee have issued a revised edition of their Report No. 24, embodying their decisions on certain points which have been brought before them since the first issue of the Standard Specifications for Railway Rolling Stock Material. Some of the more important modifications to the specifications are indicated below: (1) The prohibition of a re-test in the case of failure under the falling weight test for axles; (2) The option of a bend test in the specification for carriage and wagon axles (without analysis) if there is any question in the mind of the engineer as to the axle having satisfactorily passed the falling weight test; (3) The deletion of the specification (without analysis) for locomotive tyres; (4) The deletion of class B tyres (42-48 tons per square inch) from the specification (with analysis) for locomotive tyres; (5) The addition of class C tyres (50-55 tons per square inch) to the specification (without analysis) for carriage and wagon tyres; (6) The deletion of class A (35-40 tons per square inch) from the specification (without analysis) for carriage and wagon tyres; (7) The insertion in the tyre specifications of a formula for the deflection under the falling weight test based upon the thickness and internal diameter of the tyre in place of that previously employed which was based upon the internal diameter only; (8) The division of the specifications for laminated springs and spring steel into separate specifications, dealing respectively with spring steel and with the finished springs. With a view of restricting the tensile stress on plates of the finished spring under the scragging test to a figure somewhat below 70 tons per square inch, a definite deflection, depending upon the length of the top plate of the spring and thickness of the thickest plate, is now specified, and a table of the required deflections is inserted in the specification; (9) The addition of a further class of forgings (class E) to the forging specification; (10) The reduction of the tensile strength of rivet bars to 24-28 tons per square inch. In view of the increasing use that is being made of the British Standard Specifications abroad a table has been added, as was done in the case of the British Standard Specification for Wrought Iron for Railway Rolling Stock (publication No. 51), giving the equivalent of British tons in lbs. so as to obviate confusion with the American short ton of 2,000 lbs. The Committee have had representations made to them with regard to the use of the term "Elastic Limit" in the axle and forging specifications, and this term has now been altered to "Yield Point," a definition of this later term being added as a note to the specifications in which this term is employed.

Composite Columns of Concrete and Steel.

By William Hubert Burr.*

The effect of a concrete filling on increasing the carrying capacity of a steel column having never been sufficiently investigated, the present series of tests were carried out by the author. The columns tested consisted first of two types of built-up columns of plain steel, and secondly, of exactly similar steel members filled with concrete. The reinforced-concrete columns were filled with 1:2:4 concrete, and were tested at three months. The steelwork consisted in one case of four vertical steel angle-bars arranged as the four corners of a square and braced together with lattice bars to form a square column 6⅝ in. in exterior dimensions, and in the second case of four vertical channels arranged with their flats forming four opposite sides of an octagon, and wrapped at interval with batten plates bent round in the form of an octagon 7½ in. across the flats. Only the concrete lying within the exterior dimensions of the steelwork was included in the calculations. All the columns were 7 ft. long. Four of each type were tested, two filled with concrete and two without concrete. The plain steel columns withstood an average total load of 67 tons on an area of 4 sq. in. in the case of the angle construction before failure; and of 68 tons on an area of 4.76 sq. in. in the channel construction, which was not so securely braced. The addition of concrete increased the maximum loads before failure to an average of 98 tons on a total combined area of 42.25 sq. in. in the angle reinforcement, and 96 tons and 112 tons respectively on an area of 49.75 sq. in. for the two channel-bar columns. The modulus of elasticity of the steel being known and the compression of each column under successive loadings being measured, the modulus of elasticity of the concrete and its corresponding stress can be calculated. In the case of the angle-bar columns, this modulus was 2,321,000 lbs. per sq. in. at a stress of 1,360 lbs. per sq. in., but decreased as the stress on the columns increased. Finally, a description of the method of failure of the various columns is given; also curves showing the lateral deflection and main compression. The author concludes by suggesting that the tests would justify working stresses as high as 500 lbs. to 750 lbs. per sq. in. in columns of this nature, and possibly higher stresses for strustures of unusual magnitude.

---

*Abstract of Paper read, January 9, before the Institution of Civil Engineers.

HIC TRADE MARK.
H. INCLEDON & Co., Ltd.
(Head Office, Birmingham: Registered in England.)
Telephones 1911 and 1912,
P.O. Box 3620,
JOHANNESBURG.
ALL SIZES OF
PIPING, AND FITTINGS,
VALVES, Etc.
From ¼" to 18" kept in Stock.

THE STANDARD ANTI-FRICTION METAL OF THE WORLD
MAGNOLIA METAL
FLOWER BRAND. FLOWER BRAND.
TRADE MARK. TRADE MARK.

FACSIMILE OF INGOT.
TO PREVENT IMPOSITION SPECIFY "FLOWER BRAND."
THE MAGNOLIA ANTI-FRICTION METAL CO. OF GREAT BRITAIN L^TD
49, QUEEN VICTORIA STREET, LONDON, E.C.
Sole Agents for South Africa: MESSRS. FRASER & CHALMERS, L^TD JOHANNESBURG, BULUWAYO AND SALISBURY.
BEARING METALS TO SUIT ALL CONDITIONS SUPPLIED. CATALOGUE SENT POST FREE.

Tenders for Municipal Electricity Meters.

The number of new consumers connected to the Johannesburg Municipal Council's electricity mains is increasing at a very rapid rate, the average number of new connections being nearly 200 per month. Further, a large number of existing consumers are availing themselves of the new tariffs recently passed by the Council, involving the fixing of two or more additional meters where the "Two-rate" tariff is required. In consequence of this, an abnormal number of meters have been used during the past half-year, and the Department's stock of meters has become very low. To avoid the expense of having to fix two or more meters on every connection where the two-rate tariff is required, the Council has decided to adopt a type of meter known as the "Two-rate" meter, in which there are two dials combined in the one instrument, the one dial indicating the units consumed on the "low" rate and the other units consumed on the "high" rate. The capital cost of the combined instrument is only about 60 per cent. of that of the two separate meters, and further, the cost of fixing a "two-rate" meter will be very considerably less than that of the separate meters. In response to enquiries through Departmental Specification No. 72, the following tenders were received: Schedule "A," for the supply of Watt-hour meters:—A.E.G. Electricity Co., price £2,310 delivery in 12 weeks; H. Barder & Co., £4,141 17s. 8d., 10 weeks; Brit. Westinghouse, £3,093 6s., 10 weeks; Brit. Gen. Elect. Co., £2,011 15s. 10d., 4 weeks; H. Davies & Co., £3,100, 10 weeks; F. Peabody Rice, £3,254 16s., 8 weeks; Siemens, Ltd., £2,273 18s., 6 weeks; S.A. Gen. Elect. Co., £2,227 3s. 4d., 7 weeks; Telegraph Mfg. Co., £1,325 2s., 10 weeks (incomplete tender. Do not quote for 20 and 50 amp. meters.) Schedule "B" for the supply of two-rate watt-hour meters:—A.E.G. Elect. Co., price £3,249 14s., delivery in 12 weeks; H. Barder & Co., £4,280 7s. 10d., 10 weeks; Brit. Gen. Elect. Co.: no quotation for watt-hour meters; H. Davies & Co., £1,000, 10 weeks (incomplete); F. Peabody Rice: no quotation for watt-hour meters; Siemens, Ltd., £3,284 4s., 6 weeks. Under Section "A," it will be noted that the lowest tender is that of the British General Electric Co., but the tender of this firm is not to specification, in so much as their tender is for a "drum" type of dial, instead of the "disc" type as specified. After experience on many thousands of meters and every type of dial, it has been proved that the "disc" type meets the requirements of the Department better than any other, and this type of dial was distinctly specified. Further, it happens that considerable trouble has already been experienced on the particular make of dial tendered for by the British General Electric Company, and therefore the Council has passed over their tender. The next lowest tender is that of the S.A. General Electric Co. for the English-made "Thomson-Houston" meter. This meter has a particularly good type of the "disc" cyclometer dial, and further, has several other features that render it highly suitable for use on the Council's electricity mains. The tender of the S.A. General Electric Co. for all meters under Section "A" at a total cost of £2,227 3s. 4d., delivery to commence in seven weeks, has been accepted. Section "B": This covers two-rate meters for both Alternating and Direct Current. In the case of the Direct-Current Meters, alternative tenders were asked for Watt-hour meters and ampere-hour meters, but the slightly increased cost of the Watt-hour meters is more than compensated for by their greater accuracy on a variable pressure. The figures shown in the schedule are therefore for Watt-hour Meters only. The cheapest tender is that of the A.E.G. Electrical Co., but the meters tendered for have the "drum" type of dial already referred to in Section "A," instead of the "disc" type, as specified. Further, the time of delivery is double that of the next lowest tender, that of Messrs. Siemens, Limited, for only £34 10s. extra on over £3,000. The great urgency in obtaining these meters has already been explained, and we propose therefore to pass over the tender of the A.E.G. Electrical Co. There are at the present time over 3,000 of the "Siemens" meters in use on the Council's electric supply mains giving every satisfaction. The type of meter tendered for is strictly to the Department's specification, which, as before stated, was prepared on experience gained on many thousands of meters during the past five years. The tender of Messrs. Siemens, Ltd., for the supply of electric meters, as detailed in Section "B" has been accepted, and an expenditure of £3,284 4s. sanctioned for this purpose.

HENRY R. MERTON & Co., Ltd.
2, METAL EXCHANGE BUILDINGS,
LEADENHALL AVENUE, LONDON, E.C.
England.
Cable Address: "MERTON," London.

SELLERS OF
Copper, Tin, Lead, Spelter, Antimony, Nickel, Aluminium, Quicksilver, Sulphate of Copper, Zinc-dust.

South African Representatives:
MESSRS. PARRY, LEON & Co.,
Mercantile Buildings, Simmonds Street,
P.O. Box 1101. JOHANNESBURG.

The Association of Certificated (S.A.) Mechanical Engineers.

The second annual meeting of the Association of Certificated (S.A.) Mechanical Engineers was held last week. The President, Mr. E. T. Denby, of the Nourse Mines, reported on the work done by the Council during the past year, and the accounts and report were unanimously adopted.

Mr. Alex. Wallace, Resident Engineer Robinson Deep, was elected President, and Mr. S. McCheeney, Resident Engineer Meyer and Charlton, was elected Vice-President for the ensuing year.

The following gentlemen were elected to the Council: Messrs. E. T. Denby, Nourse; A. McLuckie, Crown Mines; T. M. Smith, Robinson; H. Dall, West Rand Consolidated; R. Tellam, Knights Deep; W. F. Cosser, Cinderella Consolidated; J. Wilson and R. Craib, Simmer and Jack; A. C. L. Olsen, Bantjes; Leslie Pryce, City Deep; S. T. Tregasis, City and Suburban; T. Begbie, York; L. Morton and C. Runtzler, Rosherville; F. W. Leeds, S. Taylor, and R. J. Bell, Crown Mines; J. Innes and S. Smith, East Rand; A. Rodger, Roodepoort United; H. A. Buckland, Ferreira Deep; W. B. Patterson, Brakpan; J. Chisholm, Modderfontein; T. Farris, May Consolidated; J. W. I. Morcom, Randfontein; A. Broom, Apex; E. G. Clifford-Jones, Consolidated Investment Company; J. Q. Braidwood, J. Berry, H. L. Burgess, A. Robertson, C. McCann, and Kenneth Austin, Hon. Secretary, P.O. Box 4305. The Association has filled a great want, and is doing some good, steady, practical work in the sphere of activity occupied by the certificated mechanical engineers of the South African Union.

A New Safety Catch for Cages.

Last week a new safety catch was exhibited at Kimberley, the invention has for its object to provide an arrangement whereby in the event of breakage of the hoisting rope or wire of a mine cage, the cage may be adjusted to stop within twelve to sixty feet, and effectually supported. The apparatus, which is disposed at the upper end of a mine cage, comprises a rectangular frame the side members of which are slotted to receive bearings in which are journalled two parallel shafts disposed on opposite sides of the wooden or metal slides, and to each of which is keyed or fitted a pair of toothed wheels adapted to engage a face of the corresponding slide. Each pair of wheels is normally held, against the action of an adjustable spring, out of engagement with the corresponding slide by means of a wire, each wire being led round a pulley on a transverse of the frame and secured at one end to the corresponding shaft, the other end of the wire being secured to the winding rope. The arrangement is such that when the winding rope is under tension the wheels are held clear of the slides, but in case of breakage of the winding rope, and its consequent slackening, the wires will also sag and permit the springs to press the shaft in the direction of the slides, so that the wheels engaging the slides are caused to rotate, and to rotate the shafts. Each shaft has screw-threaded portions engaged by nuts, one incline face of each of which engages a wedge-shaped block, the blocks being fixed to the transverse members of the frame work. Thus, by rotation of the shafts, the nuts are caused to mount the wedge-shaped blocks, and to force the shafts positively in the direction of the slides, causing the wheels to bite into the slides. The extent of rotation of the shafts is limited according to the distance which the nuts may travel, so that when the cage has fallen slightly, the shafts and the wheels will be gradually stopped by the jamming of the nuts, resulting finally in the suspension of the cage from the wheels. For the purposes of the experiments a model cage, weighing two hundredweight, was run on guide bars sixteen feet high. The cage carried a load of 200lbs., and in all the tests it stopped in about ten feet. De Beers Consolidated Mines, Ltd. are interesting themselves in the invention, and a full-size cage is at present under construction at the workshops, and a trial will, it is hoped, be made next month. A model was also exhibited before the Safety Catch Commission in Johannesburg, the members of which were so impressed with the simplicity and utility that they urged early tests under mining conditions.

Sun Power Company.

AN INVENTION FOR PRODUCING POWER FROM THE HEAT OF THE SUN.

The Rand will be interested to hear that another device to utilise sun power is being exploited. The Sun Power Company (Eastern Hemisphere), Limited, is being formed in London. It is stated that after several years of experimental work Mr. Frank Shuman (the inventor of wired glass and the Simplex pile) in the summer of last year erected a plant in Philadelphia capable of developing power from the sun on a practical commercial basis, which was demonstrated personally to two of the directors of the company and to Mr. Ackermann, the well-known engineer, at Tacony, Philadelphia. Numerous attempts have been made to solve this all-important problem, and Sir J. J. Thomson, F.R.S. (Cavendish Professor of Experimental Physics at Cambridge University), who is described as one of the greatest scientists of the day, has stated that the sun can be harnessed to do the work of coal or any other fuel in running an engine, but that the whole commercial success of such a plant must depend on the cost. Mr. Shuman claims that he has solved this question. It is pointed out that as a proposition for developing the resources of the Empire this sun power plant will be invaluable in many parts of the British dominions for irrigation and other power purposes. Under test last summer at Tacony, Philadelphia, the engine was raising 3,000 gallons of water per minute to a height of 33 feet, and this was witnessed by many thousands of people. Professor Boys, F.A.S., of London, having gone into the merits of this invention, has become consulting advisory expert to the company. In any tropical or semi-tropical region where the sun is continuously powerful, such as Egypt, India, Australia, Persia, Turkey, Africa, Straits Settlements, Algiers, Tripoli, and Japan, Mr. Shuman states that his plant will successfully compete with coal at 10s. per ton. This standard, Mr. Shuman is confident, will, in the near future, be considerably reduced. The *Engineer* of November 10, 1911, in an exhaustive article dealing with this invention, under the title of "A Practical Sun-Power Plant," asserts, after considering Mr. Shuman's figures, that given good sun conditions, "unless coal can be bought for about 8s. per ton, the steam plant cannot compete with the sun plant." According to the prospectus, the advantages of the invention have been placed before the Indian and Colonial Governments, and the London representative of one of the most progressive Australian States has expressed the opinion that Mr. Shuman's invention "would undoubtedly go a long way to solve the problem of economical supply of power in districts devoid of fuel, but where the sun's rays are extremely powerful." The company is in communication with the various Colonial Governments asking for facilities for the erection of the plant. In connection with negotiations for the erection of sun-power plants in the tropical parts of the British Empire, the Colonial Office is awaiting practical results from the erection of a 100 horse power plant in Egypt, which is now being shipped to Messrs. Lambert and Ralli, the well-known Egyptian firm, for erection there. Within the last two months, since such prominence has been given to the invention in the Press of Great Britain, America and the Continent, numerous enquiries concerning the advantages of the sun plant have been received from people interested in mining and agriculture where fuel is expensive and the solar conditions are suitable. Favourable reports on this invention have, it is stated, been obtained from Professor Boys and Mr. Ackermann.

Commerce and Industries.

S.A. Exhibition. The Department of Agriculture, Pretoria, has issued the following circular letter regarding the proposed exhibition of South African fruit and vegetable products at the Royal Horticultural Hall, in London, 1912:—"With reference to the proposed exhibition of South African fruit and vegetable products in London this year, I regret to state that owing to unforseen circumstances the Government has been compelled to abandon the project. All arrangements made for the collection of exhibits have accordingly been cancelled."

* * * *

Union Finances. Last week's "Gazette" announces the terms of the agreement between the Post Offices of the German Empire and of the Union of South Africa with respect to the exchange of money orders. The Union receipts on revenue account for December were £1,210,650, and from April to the 31st of December, £12,381,256. The issues on revenue account in the same periods were £1,538,232 and £12,352,403 respectively. The Exchequer balance on the 31st of December was £2,036,544 13s. 4d.

* * * *

Transvaal Coal. The Electric and Waterworks Committee of the Capetown Municipality introduced the following minute at last week's meeting of the Capetown City Council: That on December 14, 1911, your committee recommended the acceptance of a tender made by the Transvaal Coal Association for the supply of coal from the Witbank Colliery, Transvaal, on the understanding that the Railway Department would be in a position to fix the charges for railway transport so as to permit of the coal being delivered in Capetown at a cheaper rate than the Natal coal. Certain experimental consignments of coal have been sent down to meet the requirements of the Electrical Department during the month of January, 1912; but your committee have now been advised by wire that the Railway Board are unable to continue the transport rates charged, and consequently Transvaal coal is found to be out of the question, and the Railway Storekeeper has accordingly recommended the acceptance of the tender for Natal coal; tenders for which were invited as reported to the Council on December 14, 1911. The committee, however, on the receipt of this intelligence directed quotations to be invited from the Union-Castle Steamship Co., Ltd., and the S.A. Collieries, Ltd., Natal, with the result that the former company offered to supply the coal required from the Natal Navigation and Glencoe mines at 23s. 6d. per ton of 2,240lbs., delivered into the coal hoppers at the Graaff Electric Works, Dock Road, in monthly quantities ranging from 700 tons in February to 1,000 tons in July and August, and amounting to a total quantity of nine thousand (9,000) tons (English). The tender received through the Government for the supply of coal from the same mines delivered worked out at about 24s. 3d. per ton (English), and in these circumstances the committee recommend that the offer of the Union-Castle Steamship Co., Ltd., be accepted for the supply of the coal required during the present year.

* * * *

Union Estimates. The Estimates of experditure for the year ending January 31, 1913, tabled by Mr. Hull in the Assembly on Monday afternoon are prefaced by a memorandum by that Minister, affording a convenient summary of the essential features. The total of the Estimates (exclusive of railways and harbours) for 1912-13, is £16,782,343, compared with £16,890,281 for the current twelve months, a decrease of £107,938. The total number of the establishment is 20,759 whites. Together with natives, Indians, part time officers, etc., the total is 27,564 compared with 28,359 for 1911-12, being a decrease of 685. The establishment at the date of Union was 27,611, this decrease of 47 being achieved notwithstanding the fact that the 1912-13 Estimates provide for increase in the establishment of the police force of approximately 469 Europeans, in the Post and Telegraphs Department of 350, and in the Printing and Stationery Department of 155 artisans. The Estimates for 1912-13 reflect alterations in the group of votes occasioned by changes in Ministerial portfolios. They also give effect to the scheme of grading of officers, which it is proposed to apply to the whole service. The following are the minimum and maximum salaries:—Permanent heads of departments, £1,200 to £1,500; under-secretaries, £850 to £1,100; chief clerks, £550 to £750; principal clerks, £400 to £550; senior clerks, £380 to £440; clerical assistants, £100 to £360. The following are the main decreases as compared with the Estimates for 1911-12:—Agriculture, £251,635; interior, £100,954; superior courts, £27,936; mines, £37,786; inland revenue, £10,159; audit, £11,459; public debt. £32,989; customs and excise, £13,089; public works department, £23,277; buildings and bridges, £35,904. The following are the principal increases:—Printing and stationery, £45,000; defence, £100,000; police, £95,732; pensions, £42,609; Provincial administrations, £106,767; posts, telegraphs and telephones, £51,017. The following is the scale of local allowances laid down:—Officers stationed at Pretoria, Witwatersrand, Bloemfontein, on the first £100 of salary 25 per cent., on the second hundred 20 per cent., on the third hundred 15 per cent., on the fourth hundred 10 per cent., on any portion of salary over £400 five per cent., with a minimum of £36 and a maximum of £100. Officers stationed in the Transvaal, Free State, Northern Zululand, British Bechuanaland, and Calvinia district, Griqualand West, Kenhardt district, Namaqualand, Port Nolloth, Walfish Bay, 20 per cent., 15 per cent., and 10 per cent. respectively on the first three £100's, and five per cent for any portion above £400, with a minimum of £24 and a maximum of £75. The following explanation is given of the various increases and decreases:

The agricultural vote shows a decrease of 1,394 officers, and of £251,625. The decrease in the number of officers is made up of 338 natives and 13 fieldcornets, who are no longer shown in the numerical column of estimates. Sixty-five officers have been transferred to other departments, and 860 officers are redundant or have been retired. The increase in the defence expenditure is to provide additional armament, reserve stores, and for the inception of the new defence scheme. A new division, styled the Attorney-General's Division, has been inserted in the vote for the Department of Justice, to which a number of officers from the Superior Courts vote has been transferred, which involves a corresponding decrease in the Superior Courts vote. The police vote shows a decrease of 2,778 officers, and an increase of £95,732. The numbers are made up of 3,031 natives, Indians and others, less an increase of 253 Europeans. The mines vote shows a decrease of 79 officers and £37,586. The decrease is principally due to the non-recurrence of the grant of £25,000 to the miners' phthisis fund, and a reduction of £10,000 in the amount for assisting district mining development. The pensions vote shows an increase of £42,609, including £33,000 for new persions, commutations of pensions, and gratuities. The vote for the provincial administrations shows an increase of £106,706. The grant for education has been increased by £145,000, and that for the administration of hospitals, etc., by about £41,000.

* * * *

New Johannesburg Town Hall. The tenders for the building of Johannesburg's Town Hall were opened at the Municipal Offices, this week, in the presence of master builders, councillors, officials, and members of the general public. Mr. W. R. Boustred (deputy mayor) presided. The tenders are as follow:—C. H. Meischke, £293,938; Prentice and Mackie, £298,000; James Thompson, £298,749; Reid and Knuckey, £314,977; Henderson and Gordon, £316,819; Templar Bros.,

£328,900; W. R. Dey, £337,005; T. Clarke & Sons, £339,849 H. J. Miller, £349,750; Jas. Lillico, £355,965. The total amount in hand for erection of the Town Hall is, in round figures, £260,000, but this includes £7,000 odd for the excavations and £25,000 for furniture and the organ case. Certain receipts, such as the rent for the hoardings, have to be taken into account, and it is anticipated that the extra amount that will have to be found will be about £40,000. The successful contractor will be limited to two and a half years to complete the building. Mr. Meischke and Messrs. Prentice and Mackie are the contractors for the Union Buildings at Pretoria.

* * * *

Elder-Dempster Line and South African Trade.

Messrs. Elder Dempster and Co., who enjoy a subsidy from the Dominion Government for their service between Canada and South Africa, give an earnest of their interest in the development of Canadian export trade by the very useful circulars on trade opening in South Africa which they issue regularly to business houses in the Dominion. In their latest circular they comment with satisfaction on the growth of exports of Canadian automobiles, of which they shipped to South Africa last year an average of 22 cars a month, as against three in the preceding year. The market for motor cars in South Africa, they say, is bound to grow, especially on the Rand, where there is a large demand among doctors and merchants for cars with seating for two passengers. The company have lately been endeavouring to interest exporters in the market for bolts, nuts, rivets, nails, screws, etc., but do not appear to be satisfied with the results. They see no reason, however, why Canadian manufacturers should not have a large share of this trade in carriage hardware, which at present is largely held by the United Kingdom, and next by Germany, Belgium, and the United States. It is pointed out that freight rates on these articles from Canada are lower than from British ports, and, in fact, from all other countries. One South African firm stated to the shipping line that they would be only too glad to "swing" their trade to Canada, and that they intended to do so just as soon as Canadian manufacturers were ready. Most of the nails shipped to South Africa are put up in 7 lb. brown paper packages, a system which has not yet been adopted by the few Canadian manufacturers at present interested in the trade. Messrs. Elder Dempster and Co. have offered to carry samples to South Africa free of charge. The market for boots and shoes is another line in which the shipping company think that Canadian manufacturers ought to do better. Particulars are given in one of their circulars of the kinds and prices of boots most largely sold in South Africa, from which we notice that not many patent leather boots are worn in South Africa. Messrs. Elder Dempster evidently would be prepared to quote special rates for freight in order to facilitate Canadian competition in these lines, and actually offer a free passage to manufacturers' representatives. The present rates from Montreal on boots and shoes are 2s. 6d. less than those quoted from American ports.

* * * *

Agricultural Co-operative Union, Ltd.

The Agricultural Co-operative Union, Ltd., recognising that its sphere of usefulness would be greatly increased if arrangements could be made by which members, under satisfactory guarantees, could obtain fertilisers, implements, seeds, etc., on credit, extending, if necessary, till such times as the crops for which the purchases were made could be harvested, the Executive Committee has made the following regulations to meet such cases:—(1) Where five or more members of the Union require fertilisers, etc., on credit, they may, after approval of the Executive Committee, form a Credit Association. (2) All the members of a Credit Association shall be responsible, jointly and severally, for all debts to the Union of that Association. (3) The members of each Credit Association shall decide among themselves the amount of credit that shall be allowed to its members, and shall submit their application for the amount required to the Executive Committee. (4) All advances shall be made to a Credit Association as such, and in no case to an individual member of such Association. (5) When applications are made by Associations for fertilisers, etc., on credit, they shall state the length of time for which the credit is required. Interest will be charged on the amounts at the rate of eight per cent. per annum. (6) Subject to these regulations, Credit Associations shall have the right to accept or reject new members, or to remove existing members when all the liabilities of such Association have been met. Such proposed additions or removals to be subject to the approval of the Executive Committee. (7) The Executive Committee shall have the right to refuse grants to any Credit Association, to limit the amount of the credit granted, and to decide the length of time for which it is to be given.

* * * *

Railway Cartage.

The Committee of the Chamber of Commerce has discussed with the General Manager of the S.A.R. the proposals (a) that heavy lifts should, as in the case of ordinary packages, be treated as "carted" traffic; and (b) that the Department should cater for ordinary cartage from merchants' stores. After full consideration, a letter was sent to the General Manager containing the following representations:—(1) "Cartage of Heavy Lifts.—I am directed to state that my Chamber is satisfied with the present arrangements as to packages exceeding 3,000 lbs. in weight, and is opposed to the proposed alterations, which are deemed to be uncalled for. If, however, your Administration insists upon treating these weights as 'carted' traffic, my Committee would urge that it will be unfair to merchants if, on taking over the sole handling of these consignments, your Department imposes heavier charges than those at present paid to cartage contractors for this work. The proposed scale has been compared with the present charges, and it is found that for delivery outside the cartage area the scale quotes for the heavier packages and the longer distances progressive rates which much exceed the present prices. It it regarded as essential that this scale should be reduced to the commercial level. Further, my Committee also considers it necessary, when introducing the revised regulation, that exemptions should be made in favour of existing contracts (for the unexpired period), and also that the railway should accept responsibility for damage or loss—especially seeing that the ordinary contractors take this responsibility. It may be added also that these contractors offload the goods and place them in consignees' stores." (2) "Cartage from Store to Store.—My Committee desire to take strong exemption to your proposals in this regard, as they involve an extension of that Government trading in directions for which ample provision is already made, which this Chamber and the Association of Chambers of Commerce has protested against. The objections to Government trading and its unfair interference with trade have been set forth on previous occasions, and in the interests of the commercial community and the trade of the country, my Committee must adhere to the position consistently taken up in this regard. I am, therefore, to express the hope that this portion of your proposals will be withdrawn." The General Manager has stated in reply that the proposed alterations to Clause 251 (c) of Tariff Book have reference to the cartage of heavy packages within the cartage area. It will continue to be optional for merchants to make their own arrangements respecting the cartage of heavy lifts to or from places outside the cartage area. The Administration has decided to introduce the amended regulations for heavy lifts as from February 1.

* * * *

A South African Rubber.

A correspondent of the "Cape Times" has sent from Namaqualand a specimen of the coagulated juice of the Euphorbia species, which grows extensively in Namaqualand, and which might very possibly be utilised for the production of caoutchouc. According to the correspondent, some efforts in this direction are already being made by a Port Nolloth resident, and in view of the importance of such an industry, it might well be that the question should receive expert attention. Mr. Sim, in his splendid work on "The Forest Flora of Cape Colony," has collected a good deal of information on the subject of the uses of the plant in question.

Johannesburg Motor Garages and Suppliers of Motor Cars, Accessories, etc.

JUST ARRIVED—1912 MODELS

PHŒNIX AND VULCAN CARS

Trial Runs Arranged. Full Particulars from

REED'S GARAGE
GOVERNMENT SQUARE, JOHANNESBURG.
Phone 1434. P.O. Box 2720.

Dunlop Repair Shop

SEND YOUR TYRES FOR REPAIR OR RETREADING TO THE MANUFACTURERS.

DUNLOP GROOVED TREADS (manufactured in our English Factory) Fitted to any make of cover.

Burst Covers and Tubes properly repaired.

Call and inspect samples of our work.

Dunlop Repair Works,
83, BREE ST.,
JOHANNESBURG.
P.O. Box 6370.
'Phone 831.

The South African
'Mining Journal'

Is the Authority on all Metallurgical Subjects, and is at once a - - - -

Newspaper and a Review.

- - Write for Specimen Copy. - -

ADVERTISEMENT RATES ON APPLICATION

SUBSCRIPTION ORDER.

Date.......................................

The South African Mining Journal,
P.O. Box 963, JOHANNESBURG.

Please enter my name as a subscriber for *The South African Mining Journal.* I remit herewith......................... in payment for one year, commencing...............................

Name ....

Address ....

SUBSCRIPTION RATES.

Oversea, £2. South Africa (by post), £1 10s. Local delivery, £1 6s.

*Back numbers, when available, will be sent if required.

First and Fastest "Hill Climbs" 1910.

First and Fastest "Hill Climbs" 1911.

VAUXHALL CARS.

Sole Agents:
T. B. ADAIR & CO.,
67, Kotze Street,
HILLBROW,
JOHANNESBURG.
Phone 2870.
P.O. Box 1940.

Automobile Notes.

The Motor Car in War.

The Transvaal Automobile Club have circularised their members in respect to a commendable idea which the committee have had under consideration for some time past, namely, the adaptability of the motor car for military operations, chiefly in connection with the transport of troops in warfare. With a view to testing the practical side of the scheme, the Automobile Club have made arrangements with the volunteer staff, it being their intention to assist them at a field day on the 11th February next by providing a fleet of motor cars to transport a number of volunteers from Johannesburg to Krugersdorp, and to this end request the co-operation of club members in loaning their cars for the occasion. The committee ask for a generous response to their appeal, which, they point out, cannot be over-estimated, having regard to the proposed Defence Scheme now in the hands of the Union Government. The advantages which the motor car possesses in modern warfare in the rapid transit of troops and munitions of war are unique, and have long been recognised as such by those responsible for the conduct of campaigns. Some very successful experiments demonstrating its immense utility have been carried out by all the European armies at their annual manœuvres during recent years, while in the war now being waged in Tripoli the motor car in certain circumstances, such as when requisitioned for rapid mobilisation, is considered well-nigh indispensable, and mention might be made in this connection of the difficulties, well within the memory of all, that beset the operations in the movement of troops and munitions during the last South African campaign, which, it is patent to-day, could have been immeasurably facilitated were the perfection now attained in motor car construction possible at that time.

Exceeding the Speed Limit.

A prominent citizen charged during the week with exceeding the speed limit, within the municipal area, as applying to motor cars, informed the magistrate of his surprise at being stopped, as he was travelling at a very moderate pace; in fact being much lower than that of many motor cars driven every day in Johannesburg. The gentleman further questioned the correctness of the test by which the authorities arrived at their conclusions, and intimated that skilled observers even made mistakes in tests carried out with the aid of stop watches. It is not intended to question or discuss the methods adopted by the police in ascertaining the speed of motor cars, but all motorists will agree that the time has arrived for the abolishment of the existing speed limit of 10 miles an hour, which, to say the least of it, is quite disproportionate, considering the perfect control and ease of manipulation which characterises the modern car. Travelling at 20 miles per hour, it can be pulled up in an almost incredibly short distance, while the improved present-day steering allows of instantaneous deviation from a course where accident, for example, to the careless pedestrian, would be simply inevitable were another vehicle involved, especially a tram car which is confined to the limits of the rails. These, and other favourable, features embodied in the present-day motor car, are worthy of more than passing consideration, and should go far to convince the authorities of the absurdity of the by-law in force governing its speed.

The Grand Prix.

The Grand Prix, an event of much importance, and immensely popular, in the automobile world, looked uncommonly like falling through some time ago owing to the scarcity of entries towards the date of closing of the lists, as the Automobile Club of France regulations make it necessary for at least twenty cars being entered. The fears, however, which had arisen have been dispelled, and latest advices give the number of competing cars at forty-eight, fifteen of which represent Great Britain, including the Vauxhall, Sunbeam, Arrol-Johnston and Calthorpe. In regard to the first-mentioned class, the same advices state that a 15·9 racer, of 80 mm. bore, and 200 mm. stroke engine turning at some 2,700 revolutions per minute, was doing laps at Brooklands at fully 100 miles per hour, and adds: "Who will deny the Grand Prix to the Luton people?"

Children and Cars.

Attention, on several occasions, has been drawn, in the local Press, to the danger that school children are exposed to in the immediate vicinity of schools by the presence of

CONTINENTAL

THE WORLD'S LEADING TYRES.

FOR MOTOR CARS:

The Extra Heavy Square Tread Tyre;
The Tropical Renforcé Three Ribbed Tyre;
The Black Red Steel Studded, as used exclusively during the "Prince Henry Trophy" Race.

FOR MOTOR CYCLES:

The Extra Heavy Tyre, Ribbed Pattern;
The Rubber Studded, Non Slipping Tyre.

N B.—All our Tyres are specially manufactured by our Home Company to suit the South African Climate and Roads, and stand UNSURPASSED in Quality.

STOCKS OBTAINABLE THROUGHOUT SOUTH AFRICA.

motors, and from actual experience it has been decided that those attending the large Government school in Twist Street, situated in a most populous suburb, on the main artery for the traffic of the northern districts, run very grave risk at certain hours owing to the numbers of cars travelling to and from the city. The decision, therefore, of the Council, made public this week, to restrict the use of the street for motor cars between the hours of 8 and 9 a.m. each day, is welcome, but does not come altogether in the nature of a surprise, as, some time ago, the attention of the Municipality, when called to the disrepair of a section of Kotze Street, between Twist and Klein Streets, took practical form, with the result that this intersection was brought into line in point of excellent surface with the other streets in that vicinity. This portion will now be responsible for the motor traffic diverted towards Klein Street, running parallel with Twist Street. The action of the Council, though some little inconvenience may be caused to residents in the vicinity, is nevertheless endorsed by the motorist community.

Aviation on the Rand.

The forthcoming aviation meeting on the Rand once again provides subject matter for reflection as to the possibilities of the aeroplane in this country. Up to the present time, however, the aerial flights attempted at this altitude have been, on the whole, signally unsuccessful, but what may be yet accomplished by the perseverance and other essential characteristics which the intrepid aeronaut is known to possess, is left to the imagination. It will probably be many years before the danger inseparably associated, at present, with the pursuit of aviation is overcome by the more perfect construction of the aeroplane and its adoption becomes general, and until such a state of things eventuate it must of necessity remain unpopular outside the professional ranks. From a strategic point of view, however, the value of the aeroplane in modern warfare is incalculable, and one authority goes so far as to say that "the aeroplane is a military proposition, and will probably continue to be so for several years longer," and this statement is borne out by the fact that this particular industry is almost exclusively supported by military orders.

A New Tyre Pump.

The motorist community are interested just now by a new patent automatic tyre pump, a local invention of much technical value, which can be readily attached to either cycle or motor car. Costing a very nominal sum in comparison with the valuable services it is capable of rendering, the attachment already promises well from a marketable standpoint. The pump, by an automatic arrangement, comes into action when a tyre deflates to a certain degree, the requisite pressure being supplied, as the wheel rotates, in a very brief time, unless, of course, serious damage has occurred to the tyre. A company, it is understood, is being floated, and contracts may be entered into for the sale of this, from all accounts, the most efficient contrivance yet devised to combat the difficulties of tyre deflation.

Tram Cars and Traffic.

Apropos of a reference made to tram cars in an earlier article, it is interesting to refer to a memorial which has recently been submitted to the Board of Trade by the Roads Improvement Association, a society founded for the protection and furtherance of the interests of users of public roads in Great Britain. It states, *inter alia*, that it has been ascertained, as the results of a series of observations made in various parts, that there are altogether an unnecessarily large number of tram cars which are maintained in use between certain hours in London, during which the call for such vehicles is comparatively slight, and were some 30 to 50 per cent. of these withdrawn, during the hours specified, a resultant relief of the existing congestion would be noticed, and further in a general charge of obstruction made against tramway cars, the memorial points out the extraordinary manner in which those who conduct tramway concerns are permitted to contravene the regulations which are laid down for their control. Tram cars, excepting on single tramway lines or at junctions, for example, are not permitted to travel at a distance of less than 50 yards from one another, and by regulations it is also forbidden for two cars on parallel sets of rails to stop within ten yards of one another, and yet how many times are motor cars compelled to stop because two stationary tram cars abreast are blocking the way? In a recent issue of this journal a criticism of the Johannesburg tramway system under the heading of "The Case for the Car" was responsible for precisely similar views in regard to stopping places, and it was pointed out at the time that the inward and outward cars should never draw up abreast as the present system of car stops allows, nor should trams be permitted to stop immediately beyond a street intersection or corner, as the case may be. It will be seen, therefore, that the causes of complaint in London are similar to those in Johannesburg, and the remedy, in the absence of a Roads Improvement Association, might be cordially commended to the T.A.C. or other local body having the welfare of motorists at heart, and a general regard for proper street control.

A Visit from Mr. S. F. Edge.

Mr. S. F. Edge writes to us as follows:—"Just a note to advise you that I shall be leaving England on Saturday, January 20th, on the Walmer Castle, for South Africa, arriving there on February 6th. A note in your paper asking for assistance of South African motorists will be much appreciated. The principal towns I shall visit and the approximate dates I shall be there are as follows:—Cape Town: February 6th to 10th; letters to Mount Nelson Hotel. Port Elizabeth: February 12th to 17th; letters to Arkell & Douglas, P.O. Box 360. Between these dates I shall visit Grahamstown. Kimberley: February 19th to 22nd; letters to Post Office. Bulawayo: February 24th to 27th; letters to Post Office. Gwelo: March 1st to 3rd. Salisbury: March 4th to 7th; letters to Puzey & Payne, P.O. Box 226. Mafeking: March 9th. Johannesburg: March 10th to 15th: letters to Post Office. Durban: March 16th to 20th; letters to Post Office. Pietermaritzburg: March 20th to 23rd. Cape Town: March 26th to 27th; letters to Post Office. I am going out with the intention of making myself familiar with the exact motoring conditions in South Africa, and to understand the conditions cars have to fulfil to be most suitable for South Africa. I anticipate coming back with valuable information for the special benefit of the Napier, and also I hope for the benefit of the British motor industry in general."

Revocation of Patent.

Some interesting questions in Patent Law and practice were involved in a case which recently came before Mr. Justice Parker. The patent in question was one (number 27147 of 1910) granted to Mr. J. C. Merryweather for improvements in automobiles carrying pumps, and the alleged invention appears to have consisted in driving the pump by means of a chain. Messrs. Hans Renold, Limited, who are manufacturers of driving chains, applied to have this patent revoked. In their view the mere substitution of chain driving for some other method of driving, such as belt or spur gearing, in connection with any particular class of machines was not proper subject matter for a patent. It was a substitution already made in connection with many different machines, and one which might hereafter be made in connection with many others. To grant patents in such cases would hamper the development of the chain making industry. They accordingly petitioned for the revocation of the patent on the ground of want of novelty, prior publication and use, and that the alleged invention was not a proper subject matter for a patent. When the case came on the patentee consented to the patent being revoked, but in connection with the question of costs, raised an objection that the petitioners had given no notice to him of their intention before commencing proceedings. If they had done so, then he contended he might have surrendered the patent and saved some expense. The judge, however, allowed the costs of the petition, remarking that it is doing a kind of public wrong to maintain a patent on the rolls when that patent is void. This case illustrates the fact that it is not too easy to obtain patents which cannot be sustained, but which while they are in existence must operate as a check upon legitimate industry.

Our Twenty-First Anniversary Number.

THE LAST WORD ON RAND MINING.

To commemorate the twenty-first anniversary of the founding of this journal, a special number, distinct from the ordinary weekly issue, will be published early next May. Fittingly to mark the occasion, the number will contain a comprehensive and concise account of the past history, achievements and present position of every gold mine on the Rand, illustrated and brought down to the latest possible date. It will review the industry generally as well as in its several technical aspects, and will include articles by experts on the chemical, mining and metallurgical progress and problems of the fields. A feature will be made of the personal side of the industry, and a section will be devoted to its technical and administrative leaders, enriched with portraits and other illustrations. Engineering on the Rand in all its phases, electricity, steam and air power will be treated, and the growth and progress of electric power supply will be exhaustively discussed. The gold mines of the outside districts and the tin, copper and coal industries of those districts will be dealt with thoroughly and at first hand. The great diamond industry of South Africa will have a section to itself, and here, as in the treatment of the base metal industries, the letterpress will be embellished with many striking and original illustrations. Mining in the Cape, Natal and Orange Free State Provinces will also be reviewed and the undoubtedly great mineral potentialities of those, as yet undeveloped, areas will be graphically set forth. German South-West Africa will find a place in the issue and a first-hand account of the diamonds, the copper and the tin mines of that promising field will be included. Moreover, the banks and other great financial institutions, the railways and harbours of the sub-continent will be adequately dealt with, and the whole problem of transportation as it affects the inland industrial centres will be reviewed. In this connection Capetown, Port Elizabeth, Durban, East London, Delagoa Bay and Beira will be separately and fully treated and their claims examined. Apart from mining, there will be a considerable section devoted to a description of the several subsidiary industries dependent on mining for a market. Chief among these will be cement, explosives, soap and candle-making, milling and the hundred and one activities that centre in the Rand. Rhodesia and Mozambique will be given a separate and extended treatment. The different mines will be described and illustrated, and the recent progress of the industry in those territories dealt with comprehensively and lucidly. In addition, the issue will contain a number of interesting and valuable contributions from leading men in the mining and financial world, many of whom have already sent their congratulations on the decision to issue a special commemorative number of the journal. Numerous letters received from past Rand engineers and mine managers, now resident in all parts of the world, contain offer of contributions. These will form a unique collection of valuable views and reminiscences, and will considerably enhance the interest of the volume. The work will consist of upwards of 350 pages, printed throngbout on art paper. Prizes are offered to artists for the best design of a suitable and striking character, and particulars are given in another part of this issue of other valuable prizes to be awarded in connection with the number. It may be added that the work will be prepared, produced and printed in South Africa, and will aim to cover the whole field of mining in this country, and to prove a fitting monument to the great industry with which, from the beginning, the *South African Mining Journal* has been associated. The co-operation of everyone interested in the industry is being enlisted to make the venture a success, and already it promises to mark an advance on anything of its kind ever before attempted in South African illustrated journalism.

When communicating with advertisers kindly mention the *South African Mining Journal*.

Telephone 217. Box 2127.

GEORGE McINNES, B.Sc.,

Importer of Electrical Supplies for the Trade.

Sole Agent for the "ARCONA" Metal Filament Lamp.

MARSHALL SQUARE, JOHANNESBURG.

ESTABLISHED 1892.

New S.A. Companies Registered in London.

AFRICAN WHALING AND DEEP SEA FISHERIES SYNDICATE

This company was registered on December 20, with a capital of £100 in £1 shares, to establish and promote a company to be called African Whaling and Deep Sea Fisheries, Limited, or such similar name as may be agreed upon, having for its objects (*inter alia*) the business of steam trawler owners, deep sea fishers, fish salesmen, etc. Private company. The number of directors is not to be less than two nor more than five; the first are H. D. Patterson and W. Barrier. Registered by C. R. Enever, Broad Street House, E.C.

SCHABOK, LIMITED.

Registered, with a capital of £40,000 in 25,000 preferred ordinary shares of £1 each and 30,000 deferred of 10s. each, to acquire and carry on the business—so far as relating to the manufacture of "Schabok"—carried on by C. Hirschman, Lindley, Orange Free State, Schabok being a remedy for worm and other affections in horses, cattle, goats, and members of the feathered species. Registered office, 94, Hope Street, Glasgow.

CYANIDE of SODIUM, 120 %

ZINC DUST, SHEETS and SHAVINGS.

MABOR FUSION CUPELS and MATERIAL.

3 STAR CRUCIBLES and CRUCIBLE BARS.

3 STAR LITHARGE.

HARDWOOD MINING POLES and SAWING TIMBER.

"BRUNSVIGA" Calculating Machines.

RICHARD HEYMANN & CO.,

73/5 Exploration Buildings.
P.O. Box 2425.
Telephone 351.
Telegrams: "Extra."

Tents, Sails, Camp Outfitting & Farmers' Goods

(All Goods Offered Subject to Being Unsold.)

E.P. TENTS, size 16 x 20, outer roof three ply, inner roof, two ply, walls three ply stayed with bamboo poles. I turn out these tents almost equal to the original, which is made in India, and costs £75 new. My price for these, thoroughly overhauled, and complete, second-hand, £17 10s. to £25 each. Bell tents, second-hand, full-sized, thoroughly overhauled and complete with pegs, pole, and mallet, 50s. each. Also every other class of tent can be had at my usual cut prices.

COLLAPSIBLE CAMP FURNITURE.—Folding brown canvas beds, 16/6 each. Green canvas beds, better class, 30/- each. Very strong stools, 2/6 and 5/-. Chairs, 10/6, 12/6 and 15/-. Indian Rhookee Chairs, 31/6 each. Military Lounge Chairs, 25/- each. Military Haversacks, 1/- each. "X" Tables, 16/6 to 23/6 each. Canvas Bath and Basin combined, 25/- to 33/6 each.

DRILL CABLE.—Well-known Blue Strand, 1¾in. in 300ft. coils, 10d. and 1/- per foot.

WRITE, CALL OR 'PHONE FOR LISTS.

S. B. WITHEROW

92, FOX STREET (OFF ELOFF STREET),
Box 1990. JOHANNESBURG. 'Phone 2417.

Contracts Open

The Benoni Municipality invites tenders for the supply and delivery of certain fire appliances (Feb. 21).

The Municipal Council of Krugersdorp invites tenders for the erection of a fire-proof curtain for the stage of the Town Hall (Feb. 27).

The Chairman of the Union Tender Board, P.O. Box 371, Pretoria, invites tenders for the supply of medicines, drugs, dressings, medical and surgical appliances, surgical instruments and sundries—Cape Peninsula (Feb. 14); also for the erection of charge attendant's quarters at the Asylum, Fort Beaufort, Cape Province (Feb. 14); also for the supply of medicines, drugs, dressings, medical and surgical appliances, surgical instruments and sundries—Port Elizabeth, East London and Kimberley (Feb. 14); also for the supply of uniform clothing, etc., to the Department of Posts and Telegraphs (March 27); also for the supply of the undermentioned services to the Department of the Interior:—Natal Government Asylum, Pietermaritzburg: Provisions, groceries, etc., wines, spirits, etc., mineral waters, hardware, soft goods, clothing, meat, fish, poultry, eggs, drugs, surgical equipment, etc., sporting requisites, tuning pianos, funerals, tobacco (Feb. 14). Pretoria Lunatic Asylum: Provisions, groceries, etc., wines, spirits, etc., mineral waters, ice, hardware, soft goods, clothing, meat, fish, poultry, eggs, etc., drugs, surgical equipment, etc., tuning pianos, funerals, coal, shoeing animals, tobacco (Feb. 14). Pretoria Leper Asylum): Provisions, groceries, etc., wines, spirits, etc., mineral waters, ice, hardware, soft goods, clothing, meat, fish, poultry, eggs, etc., drugs, surgical equipment, etc., tuning pianos, funerals, coal, shoeing animals, tobacco, firewood (Feb. 14): Government Laboratories, Johannesburg: Coal, wood, ice, soap, matches, dusters, glass cloths (Feb. 14). Grahamstown Asylum, Cape: Provisions, groceries, etc., hardware, wines, spirits, etc., mineral waters, gas, repair boots and shoes, forage, fodder, etc., funerals, repairing and attending clocks, soft goods, clothing, etc., meat, fish, poultry, eggs, etc., ice, tobacco, coal, vegetables (Feb. 14). Fort Beaufort Asylum, Cape: Provisions, groceries, etc., mineral waters, wines, spirits, etc., meat, fish, poultry, eggs, etc., drugs, funerals, scavenging, milk (Feb. 14). Port Alfred Asylum, Cape: Provisions, groceries, etc., mineral waters, wines, spirits, etc., forage, mealies, etc., firewood, hardware, soft goods, clothing, etc., repairs boots and shoes, meat, fish, poultry, milk, tobacco, drugs, surgical equipment, etc. (Feb. 14). Emjanyana Leper Asylum, Cape: Provisions, groceries, etc., hardware, soft goods, meat, drugs (Feb. 14). Robben Island, Valkenberg Asylum, Old Somerset Hospital, Oude Molen Relief Camp (combined tenders): Provisions, groceries, etc., mineral waters, tobacco, wines, spirits, etc., produce, hardware, soft goods, clothing, boots, shoes, etc., ice, coal, fish, eggs, poultry (Feb. 14). Robben Island, Cape: Meat, sheep, uniforms, coffins, parcels delivery, tuning pianos, purchase of sheep skins and suet (Feb. 14). Valkenberg Asylum, Cape: Funerals, repairs to boots, meat (Feb. 14). Female Lock Hospital, Capetown: Provisions, groceries, etc., vegetables, soft goods, hardware, meat, fish, poultry, eggs, etc., milk, coal, firewood, etc., drugs, medical requisites, washing, washing repairing, and restuffing mattresses, pillows, etc. (Feb. 14). Lock Hospital, Port Elizabeth: Provisions, groceries, etc., vegetables, firewood, hardware, soft goods, meat, eggs, drugs and surgical equipment, funerals, brandy (Feb. 14). Lock Hospital, Kingwilliamstown: Provisions, groceries, etc., beef, mutton, vegetables, firewood, hardware, soft goods, milk, eggs (Feb. 14). Public Health Laboratory, Capetown: Ice, forage, bran, etc., Spratts' rodnim (Feb. 14).

The Municipal Council of Johannesburg invites tenders for a screen to the Gaol intake and fencing around same, near the Gaol, Johannesburg (Feb. 7).

The Secretary of the Tender Board, S.A.R. Offices, Johannesburg, invites tenders for the erection of three pairs semi-detached masonry quarters at Bethlehem, O.F.S., with alternative tender in brick (Feb. 6); also for the erection and completion of catering stores and office buildings at Braamfontein (Feb. 6).

The Municipal Council of Johannesburg invites tenders for the supply of bricks (Feb. 3); also for the erection and completion of animals' cages at the Zoo, Hermann Eckstein Park (Feb. 6); also for the supply and delivery of 10 or 25 electric tram cars (April 1).

The Chairman of the Tender Board, Provincial Secretary's Office, Market Street, Pretoria, invites alternative tenders for the undermentioned services (a) in wood and iron (brick lined) and (b) in local brick:—(1) Erection of school for 80 pupils and quarters for teachers at Haaskraal No. 173, Potchefstroom district; (2) erection of a school for 100 pupils and teachers' quarters at Koedoesfontein No. 12, Potchefstroom district; (3) erection of a school for 64 pupils and teachers' quarters at Rietfontein No. 114 (*alias* Rietfoort No. 114, *alias* Berlin), Potchefstroom district; (4) erection of a school for 48 pupils and teachers' quarters at Klippan No. 268, Klerksdorp, Potchefstroom district; (5) erection of a school for 80 pupils and teachers' quarters at Wolvespruit No. 65, Wolmaransstad district; (6) erection of a school for 64 pupils and teachers' quarters at Rhenosterfontein No. 13, Marico district; (7) erection of a school for 100 pupils and teachers' quarters at Kleinfontein No. 76, Marico district; (8) erection of a school for 64 pupils and teachers' quarters at Cyferfontein No. 299, Marico district; (9) erection of a school for 64 pupils and teachers' quarters at Fouries Graf No. 303, Bloemhof district; (10) erection of a school for 48 pupils at Rietfontein No. 274, Potchefstroom district; (11) erection of a school for 100 pupils at Witpoort (Lot No. 121), Wolmaransstad district; (12) erection of a school for 48 pupils at Rooipoort No. 380, Ventersdorp, Potchefstroom district; (13) erection of a school for 64 pupils at Rhenosterfontein No. 546, Rustenburg district; (14) erection of teachers' quarters, Grootvallei No. 105, Marico district; (15) erection of teachers' quarters, Cyferfontein No. 251, Lichtenburg district; (16) erection of teachers' quarters, Geluk No. 97, Lichtenburg district; (17) erection of teachers' quarters, Doornbult No. 197, Lichtenburg district; (18) erection of teachers' quarters, Holfontein No. 186, Lichtenburg district; (19) erection of teachers' quarters, Leeuwkuil No. 23, Lichtenburg district; (20) erection of teachers' quarters, Geysdorp, Lichtenburg district; (21) erection of teachers' quarters, Leeuwfontein No. 656, Ventersdorp, Potchefstroom district; (22) erection of school for 64 pupils and teachers' quarters at Proposal No. 203, Bloemhof district; (23) erection of school for 64 pupils and teachers' quarters, Welgevonden No. 284, Lichtenburg district; (24) erection of school for 64 pupils and teachers' quarters at Doornpan No. 167, Lichtenburg district; (25) erection of school for 125 pupils and teachers' quarters at Elandskuil No. 110, Ventersdorp, Potchefstroom district; (26) erection of school for 64 pupils and teachers' quarters at Rhenosterhoek No. 607, Rustenburg district; (27) erection of school for 6 4pupils and teachers' quarters at Rhenosterhoek No. 264, Rustenburg district; (28) erection of school for 80 pupils and teachers' quarters at Rietfontein No. 299, Rustenburg district (Feb. 16). Tenderers may submit prices as under: (1) A price for all the above services as one group; (2) a price for any number of schools as a group; (3) a separate price for each item.

South Deep, Ltd.

The third ordinary general meeting of shareholders in the above company was held last week at the Consolidated Gold Fields Building, Mr. F. D. P. Chaplin, M.L.A., presiding. The representation was £131,634. There were present Messrs. D. Christopherson, F. L. Brown, A. G. Gill, W. S. Smits, J. E. Kent, and J. D. Low (secretary). The Chairman formally moved the adoption of the report, which was agreed to. The retiring directors—Messrs. D. Christopherson and E. A. Wallers—were re-elected. Mr. Thos. Douglas was reappointed auditor

Southern Freeholds, Ltd.

The third annual meeting of shareholders in the above company was held last week at the Consolidated Gold Fields Building. Mr. F. D. P. Chaplin, M.L.A., presided. The representation was £2,871. There were present Messrs. D. Christopherson, F. L. Brown, J. E. Kent, W. S. Smits, A. G. Gill, and J. D. Low (secretary). The accounts and report were adopted. The retiring directors—Messrs. D. Christopherson and F. D. P. Chaplin, M.L.A.—were re-elected. Mr. Thos. Douglas was reappointed auditor.

Breyten Collieries.

The second annual meeting of shareholders in the above company was held last week at the Consolidated Gold Fields. Mr. D. Christopherson presided. The representation was £55,982. There were present Messrs. Chaplin, F. L. Brown, W. S. Smits, Dr. A. P. Woollright, F. H. Tarlton, E. H. J. Stewart, and J. D. Low (secretary).

The Chairman said: Gentlemen,—At the last annual meeting you were informed that owing to the board having been advised that it would be more economical for various reasons to erect a plant to deal with a larger tonnage than 20,000 tons per month (as was the original intention), and also that certain plant for underground work was necessary in order to make a considerable saving in working costs, it would be necessary to finance the company further. On April 28 a special meeting of shareholders was held, and it was then agreed that the capital of the company should be increased to £100,000 by the creation of 40,000 shares of £1 each. In due course these shares were offered at a premium of 10s., and applications were received for 30,000 shares out of the 40,000 offered, the issue realising £44,324 5s. 6d. Of this amount £32,187 was required to pay off the then existing overdraft with African Banking Corporation. The capital expenditure on development and the equipment of the mine has been greater than was originally estimated, largely owing to the change of policy as regards the size of the plant and also because the railway siding, which cost £17,000, finally cost £25,500, due to the fact that the original estimate made by the railway authorities was based on an estimate of five miles of rails, whereas the actual length worked out at approximately 7½ miles, and expensive bridges had to be built over watercourses. The position at the colliery to-day is that you have a plant erected capable of dealing with an output of approximately 50,000 tons per month, which, with small expenditure, can be increased to 65,000 tons. The accounts before you give full particulars of the financial position of the company as at October 31. The profit shown amounts to £1,202, which represents profits for seven months, viz., from April 1 to October 31, the working costs for that period being above normal, as is generally the case when first opening up a colliery. I will now put before you the financial position of the company as at December 31, 1911, together with the further liabilities and expenditure that we have yet to meet. The estimated overdraft at December 31, after allowing for amounts due being received and trade accounts due being paid, amounted to £6,500; amounts due on mechanical engineer's order not paid at that date, £3,333; amount still to be spent on authorised expenditure, £950; amount due to the railway for siding construction, £7,000; making a total of £17,784. It will be necessary during the next few months to construct a dam and to extend the compound and build a permanent native hospital. This we estimate to cost about £2,800. This is all the capital expenditure that we can foresee to-day outside certain additions and alterations to the accommodation for white employees and to the siding equipment, which amounts will be charged out to working costs during the year. The capital expenditure as shown above, amounting to approximately £14,079, can be met by the arrangement we have with the African Banking Corporation, full particulars of which were given you at the extraordinary general meeting of shareholders called for the purpose of empowering the directors to enter into same. From the returns we are now getting it would seem likely that the whole of these liabilities will be met out of profits during the present current financial year. I might mention that your directors will always consider, should opportunity occur, the question of placing the 10,000 shares still in reserve, thus freeing the company of all liabilities at an earlier date. The colliery to-day has contracts which will ensure a market for 30,000 tons per month until June, 1917, and I am able to report to you that it would appear that these contracts can be satisfactorily carried out, as the latest development shows that the coal in each section maintains its even thickness of seam and consistently good quality, and, further, continues perfectly clean and entirely free from shale from roof to floor. The latest monthly results that are available are those for December. During that month the output amounted to 31,148 tons, and a profit of rather over £2,000 was made, and to-day we see no reason why these profits on this tonnage should not be maintained, if not increased. The working costs of a colliery during the earlier stages of its production are heavily loaded with the cost of rails, sleepers, air mains, etc. This expenditure should later on become a diminishing amount, until a normal condition is reached. In addition, as I have stated above, the working costs have at present to bear an extra cost in connection with alterations and additions which have become necessary. I cannot conclude without expressing our thanks to Mr. Lewis, your manager, for the strenuous work which he has given to the company. Mr. Lewis took charge of the property as manager from the start of operations, and I attribute the satisfactory position in which we find ourselves to-day greatly to the skill and energy with which he has carried out his duties, and to the willing co-operation which his staff and himself have secured in every branch of the work. I now beg formally to move the adoption of the report and accounts. The report and accounts were adopted. The retiring directors, Messrs. F. D. P. Chaplin, M.L.A., and D. Christopherson, were re-elected. Messrs. Thos. Donglas and F. A. Stokes were reappointed auditors

New Patents.

44. James Hodgson, Samuel Wyndham Hodgson, and James Hodgson. —An improved water service for mine workings.
45. Fred Steel and Robert Blane.—Improvements in rollers for supporting the hauling rope in mechanical haulages, and for other analogous purposes.
46. William Arthur Caldecott and Walford Robert Dowling.—Improvements in and relating to tube mills.
47. William Alderson.—Improved method for preventing dust particles escaping from drill holes.
48. William Alderson.—Improved method for destroying dynamite and powder fumes when blasting.
49. Leslie Harold Friedman.—Improvements in typewriting machines.
50. Francis Ernest Dunnett.—Improvements in writing and printing inks.
51. James Henry Reid and George Goodwin.—Improvements in electric furnaces.
52. James Henry Reid and George Goodwin.—Improvements in process of treating ore.
53. James Henry Reid and George Goodwin.—Improvements in electrodes for electric furnaces.
54. James Henry Reid and George Goodwin.—Improvements in electric refining crucibles.
55. Hugh Denehy and Frederick William Bergner.—Improvements in automatic direct-acting overwind trip gears for electric and other hoists.
56. Fridge Alexander Gillan and Henry Denehy.—Improvements in electrical over-wind safety devices for electrical hoists.
57. James Harris.—Improvements in straightway valves and the like.
58. James Conning.—A new or improved system of ventilation.
59. Andre Leon Felicien Levy Strauss and Henry Cohn.—Improved torch suitable for lighting fuses.
60. Wilheim Hinselmann.—Improvements in conveyors of the jigging type.
62. Milton Dana Morrill.—Improvements in or relating to molds for concrete walls, floors, ceilings and the like.
62. Unbreakable Pulley and Mill Gearing Co., Ltd., and Frederick William Stroudley.—Improvements in means for the lubrication of shaft and like bearings.
63. Citoplate Ceseilschaft mit Beschrankter Haftnng and Georg Seidel. —Improvements in apparatus for machining curved stereotype plates.

INVESTORS' DIARY.

The following company meetings have been announced :—

Feb. 20.—Premier (Transvaal) Diamond Mining Co.
Feb. 28.—East Rand Prop. Mines.
Feb. 29.—Worcester Exploration Co. (Worcester C.P.).
March 6.—Crown Mines.
March 7.—Rose Deep.
March 8.—National Bank (Pretoria); Geldenhuis Deep; Wit Deep; Cloverfield Mines.
March 12.—Durban Rood. Deep.
March 13.—Robinson G.M.
March 14.—Bantjes Con. Mines.
March 15.—Village Deep.
March 20.—City Deep; Lancaster West; May Consolidated.
March 21.—Ferreira G.M.
March 22.—Modder "B"; Vogel Cons. Deep; Knight Central.
March 26.—Cassel Coal Co.
March 27.—Rand Mines; Modder Deep Levels; Princess Estate; Geduld Prop.
March 29.—Simmer Deep; Jupiter.
April 12.—Transvaal Consolidated Lands.
April 25.—Wit. Deep; Knight Central; Wolhuter; Treasury; Consolidated Main Reef; Main Reef West; Witbank Colliery; Vogelstruis Consolidated Deep; Cloverfield (Extraordinary General Meetings).
April 30.—New Era; Springs Mines; Brakpan Mines, Transvaal Coal Trust.
May 17.—Wit. Deep; Knight Central; Wolhuter; Treasury; Consolidated Main Reef; Main Reef West; Witbank Colliery; Vogelstruis Consolidated Deep (Extraordinary General Meetings).

What the Transvaal Mines Buy.

Do You Get Your Share of the Business ?

Stores Consumed January-June, 1911. Total £6,375,180.

(Six Months, Figures.)

CLASSIFICATION.	Total Value. £
Bags	8,639
Belting	72,667
Bolts, Nuts, Washers, and Rivets	24,947
Bricks	23,393
Candles	119,670
Carbide	19,496
Castings (Brass, £14,704; Iron, £48,364)	63,068
Cement	67,936
Chemicals and Assay Requisites	72,947
Coal-Cutting Machines	3,299
Coal (Smithy, £18,598; Steam, £778,442)	797,040
Coke (Imported, £5,928; Local, £3,358)	9,286
Cyanide	236,906
Disinfectants	7,852
Electrical Machinery, including Fittings for Power and Lighting—	
Electric Generators and Engines driving same if directly driven	7,891
Electric Hoists, including Motors	211,675
Electric Locomotives	6,583
Electric Motors driving Pumps, including Pumps, if directly driven	21,665
Electric Motors not included above	47,145
Power Lines, Transformers, etc.	115,150
Miscellaneous Machinery not particularized above...	98,531
Explosives—	
(a) Blasting Gelatine	579,280
(b) Gelignite and Gelatine Dynamite	142,235
(c) Dynamite No. 1	2,090
(d) Dynamite No. 2 and Ligdyn	32,864
(e) Other Explosives	1,476
(f) Detonators	18,512
(g) Electric Detonators (or electric fuses)...	975
(h) Safety Fuse	73,571
Fencing and Wire Netting	2,909
Fodder for Stables—	
Bran, Chaff, Mealies, Forage, etc.	16,588
Foods, etc. (for coloured labourers)—	
(a) Beans and Rice...	42,957
(b) Clothing	9,385
(c) Groceries, Coffee, Sugar, Molasses, etc.	17,028
(d) Malt and Cereals for Beer	7,415
(e) Meal (Mealie, Kaffir Corn, etc.)	159,178
(f) Meat	228,222
(g) Medicines, etc.	15,258
(h) Salt	1,108
(i.) Sundry Food, including Bread	63,507
(j) Vegetables	24,015
Hosing (Steam, Suction and Rock-drill)	35,746
Hand Tools (Picks, Shovels, Hammers, etc.)	41,076
Iron—	
(a) Bar and Angle	42,826
(b) Galvanized	18,808
(c) Sheet	2,660
Lead (Pig, £847; Sheet, £370)	1,217
Lime (White, £58.122; Blue, £4.906)	63,028
Lubricants (Oils, £64,424; Grease & Tallows, £32,191)	96,615
Water Purifiers	96
Boiler Plant, other than that of Locomotives, Traction Engines, or Steam Wagons	55,444

CLASSIFICATION.	Total Value. £
Headgear	40,387
Steam Engines—	
(a) For Winding	53,711
(b) For Pumping, including Pumps if directly driven	1,606
(c) For Compressors, including Compressors	38,073
(d) For other purposes	4,641
Pumps—	
(a) Air-driven	3,851
(b) Driven indirectly by Steam	2,768
(c) Driven indirectly by Electric Motors	28,309
(d) Driven indirectly by Gas or Oil Engine	1,080
Steam Locomotives	7,273
Traction Engines	145
Gas or Oil Engines	7,675
Mechanical Lifts and Elevators other than Belt Conveyors and Elevators	4,927
Belt Conveyors and Elevators	15,664
Other Mechanical Haulage	20,013
Reduction Plant, excluding Engines and Consumable Stores, such as Shoes and Dies, Screenings, etc.	110,143
Treatment Plant, including Furnaces	101,163
Workshop Plant, excluding Engines and Motors	11,810
Mine Ventilation Plant, excluding Engines, Compressors and Motors	15,028
Diamond Drills (property of company)	75
Miscellaneous Machinery not particularized above	159,098
Metals, Anti-friction	139,051
Packing	24,583
Paint, Tar, Drying Oils, etc.	12,917
Paraffin	13,269
Pipes and Pipe Fittings	233,083
Rails, Crossings, Sleepers, etc.	145,467
Rock-drills	45,640
Rock-drill Spares	83,928
Ropes (Wire, £55,682; Cotton and Manilla, £7,215)...	62,897
Screws, Nails, etc.	10,879
Shoes and Dies	65,049
Skips and Spares	12,796
Stationery	31.861
Steel—	
(a) Bar, Tool, Cast, etc	16,182
(b) Sheet	42,494
(c) Hand-drill	39,359
(d) Rock-drill	51,776
Timber—	
(a) Building Material (Ceilings, Floorings, Doors, etc.)	25,736
(b) Oregon, Pitch Pine, etc.	162.807
(c) Mining Poles and Round Lagging	118,072
(d) Deals	89,336
(e) Fuel	5,727
Tube Mill Requisites—	
(a) Pebbles and Flints	1,837
(b) Liners	26,030
(c) Other Requisites	7,987
Trucks and Spares	50,794
Waste	9.254
Zinc and Zinc Discs	72,845
Sundry Articles not specified above	244,522
TOTAL EXPENDITURE—STORES.	
January—June, 1911	£6,375,180

If not, Advertise in the South African Mining Journal. The Recognised organ of the Mining Industry.

THE SOUTH AFRICAN

Mining Journal,

WITH WHICH IS INCORPORATED
The South African Mines, Commerce and Industries.
ESTABLISHED 1891.

Vol. IX., Part II.] February 10, 1912. [No. 466.

HEAD OFFICE: 119-126 Exploration Building (3rd Floor).
Telephone **913.** P.O. Boxes **963** and **418.**
Cable and Telegraphic Address: **"MINING JOURNAL."**

London Editor and Manager for Great Britain: Percy Snowden, 119-120 London Wall, London, E.C., to whom all communications must be addressed.

German Agents: Dean-Mayer Co., Linkstrasse 39, Berlin, W., 9; Rudolf Mosse, Jerusalemer Strasse, 46-49 Berlin, S.W. 19; H. C. Wolff, Residenzplatz, M. 85. Kempten, Bavaria.

American Agents: Gotham Advertising Company, 95 Liberty Street, New York.

Copies of this journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Office as above.

NOTICE.—The postage of this issue of the *S.A. Mining Journal* is: South Africa, 1½d. All other parts, 2½d.

CONTENTS.

PAGE
Notes and News ... 821

Topics of the Week:

Mining Questions in the Union Parliament ... 823
The Mining Exhibition and Encouragement for the Inventor ... 824
Mines of the Witwatersrand: IX.—The Main Reef Group ... 825
Congo Mineral Prospects in 1911 ... 828
The Mining Exhibition ... 829
The Plight of the S.A. Coal Industry ... 830
The Problem of the Potgietersrust Tin Fields ... 831
The Water Cure for the Dust Evil ... 833
Progress in Cyanidation of Gold and Silver Ores during 1911 ... 834
The January Output: Group Results ... 835
Mining Men and Matters ... 836

Rhodesian Section:

Latest Charterland News ... 837
Correspondence and Discussion: "Circular v. Rectangular Shafts" ... 839
Advantages of the New Cannon Jockey ... 841
The Week in the Sharemarket ... 843
Engineering Notes and News ... 845
A Combination Tool for Prospectors and Farmers ... 845
Commerce and Industries ... 847
Automobile Notes ... 849
Index to Advertisers.

Notes and News.

Randfontein Deep: Operations Suspended. Following closely on the bad news from the Rand Collieries comes the announcement of the Randfontein Deep's closing down. We are informed that the board of directors have decided to suspend operations immediately, as the funds in hand are insufficient to reach the reef in the shaft, and the present time is considered inopportune to raise the necessary capital on reasonable terms. A cable to this effect was despatched to London on Thursday.

* * * *

Bank Amalgamations. There is undoubtedly something in the repeated rumours of amalgamation between some of the leading South African banks, though it would be premature to discuss the exact position and terms that are known to be under consideration. It is significant, however—as we pointed out some weeks ago—that the Natal Bank is promoting a private Bill in the Union Parliament empowering it to, *inter alia*, amalgamate with any other banking institution in South Africa.

* * * *

Eldorado. Notwithstanding the good reports issued by the Eldorado people in London, later accounts from the property regarding the behaviour of the reef in depth are none too favourable. Little interest is taken in the mine on this side, and London shareholders, by the time this reaches them, will, no doubt, be in possession of all the facts.

* * * *

The "S.A.M.J." in London. From this date, the position of London Editor and Business Manager in England of this paper will be filled by Mr. Percy Snowden, whose present address is c/o The National Bank. Mr. Snowden is moving into new and larger offices for the paper in the course of a few days and the address will be notified in an early issue. Enquiries regarding the special anniversary number may be addressed to Mr. Snowden.

* * * *

Wonder Mine. We understand that, owing to the depletion of the ore reserves at the Wonder Mine, the mill has been closed down. Prospecting work, however, is being vigorously continued under new management, and the property may yet make a good showing.

* * * *

The Huguenot Gold Mines, Ltd. We wish to direct attention to the announcement in another part of this issue to the effect that tenders are asked for the purchase outright of the 10 blocks of Huguenot claims (Salisbury, Rhodesia), for all or any portion of the mine, for the right to tribute the mine, or option to purchase at a price to be arranged, or, finally the right to re-construct. An excellent opportunity seems to be offered to speculators.

* * * *

Rock Drilling. In the article published in our last issue about drilling downholes with solid steel on the Geldenhuis Deep, the credit for this work is given to the Ingersoll Rand BC-11 Drill. In this connection it is only fair to Denver Rock Drill Co. to state that one of the first down-holes drilled with solid steel on the Geldenhuis Deep was drilled with their new model, No. 12-A Waugh Drill, to a depth of 59 ins. in 25 minutes, and, for the past three weeks a few of those machines have been doing this work continuously.

* * * *

Village Main Reef. As a result of a shortage of native labour, the Village Main Reef Company has had to curtail the working of the 60-stamp Wemmer mill to one shift only. This arrangement took effect from the commencement of the current month. The Village Main Reef battery of 160 stamps is not being run full time for the same reason. Last month the company crushed only 31,120 tons, and earned a profit of £33,737.

* * * *

Friedlander & Co. in the Tin-fields.

It is reported that Messrs. Friedlander and Co., Ltd., have taken over Kopperfontein 528, Driefontein 696, and Leeuwpoort 938. Presumably a portion of the latter is meant. These farms lie from ten to fifteen miles south of the Rooiberg mine, and are within the area of the Rooiberg tin-bearing quartzites and shales.

* * * *

S.A. Engineering Standards.

The Chemical Sub-Committee of the South African Engineering Standards Committee was formed in February, 1911, with the object of standardising the methods of analysis, etc., of the chemical materials used in industry and commerce in South Africa with a view to guiding those who may be required to draw up specifications for the purchase and use of these materials. It was decided that the subject of coal should first be undertaken with reference to the following:—(a) Standard methods of sampling. (b) Standard methods of analysis, including proximate analysis and determination of calorific value. (c) Standardisation of the various sizes of coal for commercial use. A large number of meetings have been held, at which these subjects have been discussed at length, and, when necessary, experimental work has been undertaken to settle finally the questions at issue with regard to South African products. A pamphlet has now been issued which embodies the results of the deliberations of the Committee on Standard methods of sampling and as this subject is of the utmost importance in itself, it has been considered advisable to publish this at once rather than wait for the final recommendations of the Committee on the other subjects mentioned above. The work has been entirely voluntary on the part of the members of the Committee who have devoted a considerable amount of time to the subject. From a first glance it appears to have been well and thoroughly done, and we hope to give it more extended notice in a future issue.

* * * *

Wit. Deeps.

One of the events of the week has been a decline in the price of Witwatersrand Deep shares. No secret is made of the fact that developments at that mine have not of late been too satisfactory. About two weeks ago the directors issued a statement in which it was reported, *inter alia*, "the pumping station on the 18th level was recovered in December, and additional pumps have been installed, bringing the total capacity of the pumping plant on the mine to three million gallons per diem, which it is expected will be sufficient to handle all the water. Development must necessarily be restricted for some months, as work on the 15th, 16th, 17th, and 18th levels, on the upthrown portion of the reefs, can only be taken in hand as the water encountered in the crosscuts is drained off each level in turn. While these conditions continue milling operations will be hampered, although after the present month the profits should show some improvement. Whilst not minimising the seriousness of the water difficulty, the Board wishes to point out that the inflow is well under control, and also that the reef, south of the water dyke, has been located on two levels, and at both points of intersection the values are very satisfactory." The *Star* on Wednesday remarked in its share market notes, when dealing with this company: "The circular issued by the directorate of this company some little time back was apparently read by dealers in the market through rose-coloured glasses, and the shares promptly rose to 53s. buyers from about 47s. 6d., but the improved results anticipated for January have apparently not been realised." It may be observed that the circular was issued by the directors in January, and that improvements were anticipated *after* the month of January. The *Star* market expert has evidently misunderstood the circular.

Premier Diamonds.

The report of the Premier Diamond Mining Company, from which we quoted last week, must be regarded as distinctly satisfactory. The improvement in 1911 as compared with the previous year, to the extent of fully 15 per cent., is due in about equal shares to better quality and rising markets. During the last three months of the company's year the production averaged per carat "considerably above the mean of the year." During the whole year the demand for Premier goods greatly exceeded the supply. Mr. Busch, the London selling representative, reports an increasing demand for the stones from countries formerly not important buyers of diamonds, and he considers that the outlook for the coming year continues to be very favourable. Over 1,000,000 loads less were washed last year; but this was due to the continued scarcity of native labour. The diminution in the average yield per load is, to some extent, attributable to the necessity of treating a certain quantity of tailings, and regarding them as ordinary mine ground. Recruiting charges have ruled very high, and this is one of the factors in the enhanced costs. The sum spent in obtaining labour was £40,836, as compared with £22,569 in the preceding year. We shall no doubt hear something interesting on this point at the forthcoming annual meeting. The report shows:—

Year to October		Value of Diamonds. £	Yield per Load. Carats.	Value per Carat.	Value per Load.	Cost per Load Washed.
1910	...	1,496,641	0·230	13/11	3/2	2/0
1911	...	1,433,970	0·213	16/ 2	3/5	2/2

The mine is opened up to the 260 ft. level, and the ground available above this level is estimated at 28,000,000 loads.

* * * *

Durban Roodepoort.

The following circular has been issued to the shareholders of the Durban Roodepoort:—"By correspondence received from a number of shareholders, who have noticed the appointment of Mr. H. Ross Skinner by the East Rand Proprietary, it would appear that these shareholders are apprehensive, and have taken it for granted that Mr. Skinner, who has been so many years general manager of our company, has terminated his connection with us. As there are nearly 1,700 shareholders in our company, and to avoid probably a large correspondence, I have been asked to state the position by circular. Mr. Skinner's agreement as general manager of the company would have expired in October of this year, but he took advantage of his presence in England in August last to make a proposal that as and from January 1 of this year Mr. Arnold Milne, who has been for many years employed on our mine, and latterly as assistant manager, should become general manager, and Mr. Ross Skinner consulting engineer, an arrangement of slight financial advantage to our company; this suggestion was accepted and a new agreement was entered into on September 6th. Some time after the conclusion of the above agreement, entered into on September 6 last, Mr. Ross Skinner was approached by the East Rand Proprietary, and, to meet his wishes, your directors sanctioned December 1, 1911, in place of January 1, 1912, as the date upon which the agreement of Mr. Arnold Milne, as general manager, and Mr. Ross Skinner as consulting engineer, should take effect. This was done in order that Mr. Ross Skinner could take up his duties with the East Rand Proprietary on December 1 last."

* * * *

London Diamonds.

A special meeting of London Diamonds was held in Johannesburg during the week, when an agreement with Sir Thomas Cullinan regarding the prospecting of the farm for a mine was unanimously adopted. Colonel Donaldson, who presided, at the same time seized the opportunity to give the shareholders some information about the prospects of the company. In the course of his speech he stated that the company's expert adviser said of the farm that "diamondiferous gravels cover four-fifths of the total area." Continuing, Colonel Donaldson said:

> "It is not yet proved whether this gravel is of a payable nature over the whole extent, as prospecting operations have been limited principally to the 500 morgen which have been proclaimed a public digging. About the proclaimed area there seems no possible doubt as to its payability. The first prospector washed there considerably less than three months ago, and I know no man who has washed there and has not found, and from enquiries made on the spot on January 14 from all the diggers then on the property, and who had tested ground at many points on this area, their finds had averaged at a value of over 30s. per load washed, and it is probable that, as more tests are made and more known about the runs of diamonds there, this splendid average is likely to be increased. The sale of the company's reserve claims, which was extensively advertised, resulted in the sale of just on 1,200 claims, mostly in ones and twos, at 30s. per claim, and arrangements had been made with various persons and syndicates for the entire balance of 5,000 owners' claims to be taken on tribute instead of purchase. The rate had been fixed at 15 per cent. of the gross finds, as well as licences. I am sorry, however, to say that only one of the syndicates had made a start for various reasons. For instance, Sir Thomas Cullinan arranged to take 1,000 claims, and intended to work them by hydraulicing, but found on more detailed examination that the fall was not great enough, and he decided to drop them and lose the licence money, but his representative is working on a smaller scale on a lesser number of claims. Terms have been reduced and one syndicate has started work and a number of private diggers are tributing company's ground, and I believe all are quite satisfied with their prospects. The expected great rush did not take place, and the company therefore started two competent men to work on its account. There has been delay in getting plant, but now both are working with fair gangs and are washing and getting diamonds. To facilitate the working of the small lots of claims sold to persons who did not wish to work their claims themselves, a Co-operative Society has been started in which the company is interested. Their plant left yesterday. It is being managed by Mr. Jerry Davis, who is now on the ground. There are thousands of claims open for pegging to the public, and the diggers are now coming in from Modderfontein, Bloemhof, and elsewhere, encouraged by the finds of their friends who had made an earlier start."

* * * *

Rhodesian Native Labour Bureau.

The following official information has been received:—The formation of a powerful organisation to deal effectively with the labour difficulty in Rhodesia is announced. The Rhodesia Native Labour Bureau has been re-organised and £75,000 has been subscribed by the British South Africa Company and leading Rhodesian mining companies, which, coupled with the proceeds from a labour tax, will place the Bureau on a sound financial basis. Mr. H. W. Kempster, who for many years was connected with the Witwatersrand Native Labour Association, has been appointed Chairman and Managing Director, and the Board will consist of prominent Rhodesians who are keenly interested in the subject.

* * * *

A Rhodesian Deal.

A proposition made to amalgamate the Rezende and Penhalonga companies, operating in the Umtali district of Rhodesia, has been shelved. Neither company has been a marked success, but the Penhalonga has been in the control of the Anglo-French-Farrar group for thirteen years, while the management of the Rezende was transferred to them only a year or two ago. Since then the two companies have been directed and managed by the same boards and the same staff at the mines. Seeing that they own two parallel sets of deposits not far from each other, an amalgamation seemed reasonable, especially in view of the fact that the engineer, Mr. C. R. Pinder, and a firm of high-class accountants had agreed upon terms which were fair to the shareholders in the respective companies and suitable to the management. However, the directors representing the Anglo-French group dissented and resigned, and the deal is still unaccomplished.

TOPICS OF THE WEEK.

MINING QUESTIONS IN THE UNION PARLIAMENT.

In the intervals between the consideration of land settlement and defence, the Union Parliament has found time this week to discuss several important questions relating to the mining industry. Dr. Macaulay's motion belongs properly to last week, but a word of congratulation may here be extended to the Member for Denver on his success in convincing the Government that his scheme for miners' settlement has "something in it." In the complete report on miners' phthisis recently issued by the West Australian Government Commission, Dr. Macaulay will find substantial support for his scheme, though the miners on the Rand seem still to require "educating" up to its advantages. At any rate the whole matter is now assured of a fair investigation. On the cognate question of phthisis, some further light was thrown in the Assembly during the week. At question time Mr. Creswell asked the Minister of Mines (1) what number of persons had received assistance under the provisions of the Miners' Phthisis Allowances Act, and what number of applicants were received and dealt with during the month of December last. (2) What balance of the £50,000 provided by the State and the mines remained unexpended. And (3) whether the Government intended to make further contributions to the fund so that relief might be secured to sufferers pending further legislation on this subject. To this the Minister replied that 355 cases had been dealt with, and 77 applications were received. An amount of £14,000 remained unallotted at the end of December. The question of further contributions was receiving the consideration of the Government. This is satisfactory as far as it goes, and disproves the exaggerated stories of inadequate funds recently current. The report of the Medical Commission on the subject has been delayed, and may differ somewhat from the unauthorised Press forecasts. It will, however, be laid on the table of the House one of these days, giving members the first opportunity of perusing it. An interesting point elicited by Mr. Emile Nathan was that, contrary to the general belief, there was no hiatus between the cancellation of the old mine regulations and the promulgation of the present ones. Quite the most interesting matter dealt with concerned that overworked and underpaid body, the Inspectors of Mines. Labour, speaking through Mr. Madeley, asked the Minister of Mines: (1) Whether all mines on the Witwatersrand were visited periodically for the purpose of inspection. (2) If so (a) What period elapsed between one visit and the next to any individual mine, (b) Whether all the underground workings were inspected on the occasions of these visits, and (3) Whether it was a fact that seldom if ever a mine was visited by an inspector except for the purpose of holding an enquiry into the circumstances of an accident, and, if so, whether this was due to an insufficient number of inspectors. In reply the Minister said the answer to (1) was in the affirmative. To (2) the period depended on circumstances. Frequent inspections were made on mines where the death rate and accidents were too high. With regard to (b) this was impossible as it would take one man about two months to visit all the underground workings. With regard to (3) the visit of an inspector was an opportunity for inspecting other portions of the mine. The monthly reports showed that there were a large number of inspections apart from accidents. The number of ordinary underground inspections during 1911 was 580. Apparently the Labour people would like to see this sadly over-regulated and inspected-to-death industry further enmeshed in State red tape, though, for the life of us, we cannot see how good can be expected to come to anyone therefrom. So far, however, the new Minister of Mines, thanks largely no doubt to the long-suffering Department of the Government Mining Engineer, has managed to convey much valuable information in his replies.

THE MINING EXHIBITION AND ENCOURAGEMENT FOR THE INVENTOR

The Exhibition promoted by the Chemical, Metallurgical and Mining Society of South Africa, which was opened yesterday at the School of Mines, possesses a twofold value. It is at once the fruit and blossom of the spirit of inventiveness that has sprung up on the Rand and a stimulus of no mean order to its further growth. Elsewhere in this issue we draw attention to the salient features of the present Exhibition, and we will content ourselves here with welcoming the accelerated enterprise of local inventors that finds expression in some of the most interesting exhibits. A great measure of the credit for the increased activity of our inventors is due, we believe, to that much-maligned body, the Mines Trials Committee. Because it does its work in silence, and because it has so frequently to dash the hopes of the over-sanguine, the Committee seldom gets any thanks for what it does. In point of fact, by its means a great deal of useless duplication of experimental work is avoided, whilst in the solution of each problem or the utilisation of each proposal there is concentrated the combined metallurgical and mechanical skill and experience available on these fields. Considerable misunderstanding exists along the Reef with regard to the committee, which, it should be plainly understood, exists to aid inventors, not to oppose them. It aims to encourage every man employed on the mines to make suggestions freely, to keep his mind alert for devising new ways of solving old problems, and to come forward unreservedly with his inventions and ideas, certain of fair treatment and due reward. From the committee, he will at least be always sure of a hearing. The complaint has often been made that in the past the mine manager or mine engineer gave small encouragement to the inventive activity of their men; and this has occasionally been used as an excuse for the lack of interest often displayed by miners and surface hands in their work. That the mines are likely to be the chief gainers by the increased endeavour of all mine employees to discover new and cheaper methods of working scarcely needs to be argued. Moreover, the magnitude of the industry and the measure of uniformity of processes in vogue combine to enhance the value of any improvement effected in present methods of treatment, and to secure a generous reward for the inventor. The operations of the Committee are, therefore, bound to benefit both the industry and the inventor. The programme of the Committee plainly states that it has been formed with the object of encouraging inventors, and that it is prepared to consider all proposals brought to its notice that have for their object the more economical extraction of gold from the ore. The scope of its enquiry covers all operations from the time the rock reaches the surface till it is sent to the dump. All proposals submitted are understood to be the property of the inventor, and whether accepted or not, will not be published or in any way utilized by any members of the Committee except through the channels agreed as between Committee and inventor. Any suggestion which the applicant considers patentable must be provisionally protected by him before being submitted to the Committee. The basis of remuneration—royalty or bonus—payable to any applicant shall be arranged before the trials begin, and applicants must state what remuneration they desire when forwarding their proposals. All trials, it may be added, will be conducted at the expense of the Committee. In forwarding applications, all information should be given, and these, if possible, should be accompanied by specifications and drawings; in addition, should the scheme submitted be similar to any which has already been tried, but has not proved successful, evidence may be demanded to show that the difficulties which such previous scheme presented have been overcome. All ideas it is needless to add, will be considered on their merits, and every proposal will receive careful attention. While every endeavour will be made to return all specifications and drawings sent in, the Committee refuses to be responsible for their safe return, and copies should therefore be forwarded. The Committee also makes it a condition that all suggestions, ideas and inventions which it is desired to submit to the Committee must be forwarded in writing to the secretary, who will, therefore, be spared lengthy personal interviews with enthusiastic inventors.

In this connection, we welcome evidence drawn from—of all places—the South African Railways, that goes to show the value of encouraging the inventive abilities of the workers. From a semi-official report appearing in the *S.A.R. Magazine*, we learn that the introduction of the Suggestion Scheme by the late Central South African Railways Administration in August, 1908, and its subsequent extension, shortly after Union, to include the whole of the South African Railways, has brought forth many original, useful, and interesting suggestions, making it evident that there are men in the service who not only take an interest in their work, but who have latent talent and ingenuity. It was the desire to develop this that led to the inception of the Suggestion Scheme. Every invention and discovery can be put down to interest in the first place, and it is the continued application of interest that suggests improvements to the mind. The most valuable suggestion put forward up till now by any employee of the S.A. Railways is, perhaps, that of Foreman Erector J. Gray, of the Durban Workshops, who received an award of £50 for bringing into working a specialised machine for the purpose of trueing up the slide valve faces of the cylinders of locomotives. The value of this invention is emphasised by the fact that, in the past, several machines which the makers claimed could perform similar work have been imported into this country, but have had to be discarded owing to the unsatisfactory work performed by them. The device itself is not a costly one, but there are various vital and intricate portions which required careful thinking out and study on the part of the designer. Other suggestions which may be mentioned, included one which enabled the Administration to save several hundred pounds per annum, and for this an employee was given a bonus and a special increase of one shilling per day; and for simplifying the printing and numbering of card tickets two grants of £25 each were awarded. As might be expected a number of interesting, and, in some cases, ingenious models were submitted from time to time, comprising such devices as train staff error preventers, self-closing gates, coupling links, shunting or coupling sticks, safety chains, ball valves and invoice holders, cattle guards, etc., dealing with mechanical engineering and traffic branches of the service. In the clerical branch many useful suggestions tending to economical and better working have also been received, comprising such matters as improvements to forms, returns, books, etc., methods of station accounting, issuing of tickets, waybilling parcels, passengers' luggage, and improvements to the Tariff Book. The more general interchange of goods vehicles has led to many suggestions that there should be a definite recognised place for the attachment of wagon labels, and this has now been decided upon. These brief particulars will give readers an idea of the subjects dealt with. Since the inauguration of the scheme over 2,000 suggestions have been received, of which 122 have been adopted, the awards running to hundreds of pounds. During the past four months over 800 suggestions have been received, showing that interest in the scheme is not flagging. For once it might be wise of the industry to take a leaf from the book of the much-despised railway management. By so doing, the work of the Mines Trials Committee might be supplemented, and the cause of health, efficiency and economy on the mines materially benefited. At the same time it cannot be gainsaid that the important section of the present Exhibition devoted to the illustration of the latest inventions and suggestions is bound of itself to prove of the highest educative value, and we shall be surprised if the Rand does not in the near future benefit from the latest stimulus to its inventive ability.

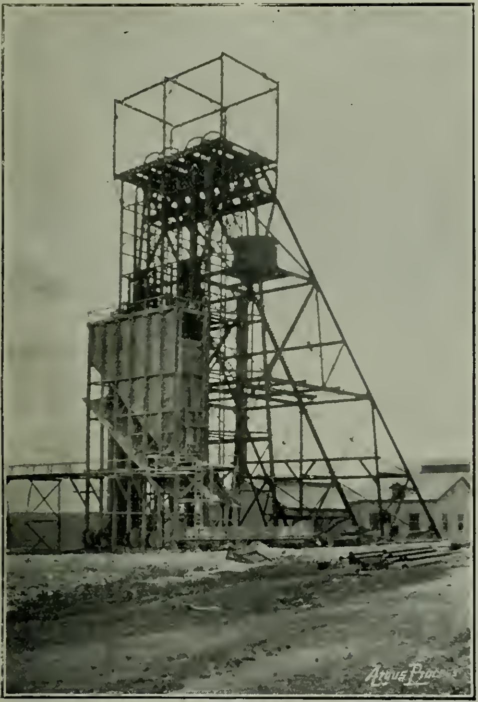
Mines of the Witwatersrand.

IX.—THE MAIN REEF GROUP.

Prospects of the Consolidated Main Reef and Main Reef West Discussed—Development Positions in the Two Properties—New Shafts and their Significance—Prospects of Mill Extension.

I.—Consolidated Main Reef Mines and Estates, Ltd.

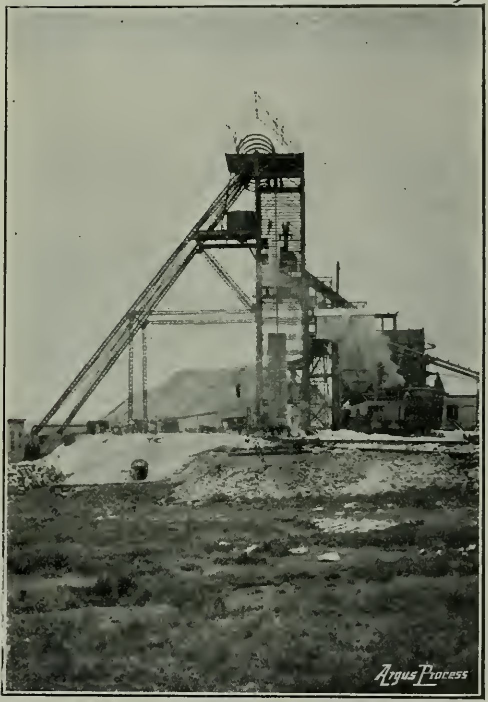
The recent improvement in the price of Consolidated Main Reef shares has in some degree reflected the better developments secured of late towards the central section from the west shaft. During recent years the Consolidated Main Reef Company has derived a large portion of its profitable ore from the western section, although the more central portion has also yielded a fair tonnage of payable rock. The eastern area of the property has, however, proved most disappointing, and although to-day an improvement is to be observed on the nineteenth level going towards the Consolidated Langlaagte western boundary, too much importance is not at present attached to this development as in the eastern areas time after time short stretches of good ore have been exposed which on further development have proved to be of very limited extent.



Consolidated Main Reef; New Deep Level Shaft.

The Central Area.

The position in the more central (or rather west central) of the company's claims is, however, most encouraging, and there is seemingly everything to justify the view that the development work carried out there during the past few months puts an improved complexion on the affairs of the company. Development in the Consolidated Main Reef may be said to have improved consistently for twelve months past. The Main Reef Leader values in the western section (that is to say, as the Main Reef West's eastern boundary is approached) are much better, the existence of a stretch of about 3,200 feet of good ore extending from the western boundary in an easterly direction has been established, ore values and widths appear to be increasing somewhat in depth and as already stated there are signs of an improvement in the eastern area, although no real measure of importance is as yet attached to this latter improvement. The good values in the adjacent Consolidated Langlaagte Mines extend up to within about 400 feet of the Consolidated Main Reef's east boundary, but there is then, it seems, a poor section intervening between the western side of this good zone and the central section of the Consolidated Main Reef. Good values, too, are being obtained on the Consolidated Main Reef's 20th level, the east drive showing most encouraging results for a distance of over 1,000 feet. In connection with the Consolidated Main Reef mine reference must be made to a transverse dyke which outcrops near the battery and strikes through the western section of the property. This stratigraphical disturbance appears to affect ore values unfavourably; at any rate, the assay plan shows impoverishment in its immediate vicinity. Taken on the whole, however, the Consolidated Main Reef appears to be in a better condition to-day than has been the case for some time past



Main Reef West; Installation at the New West Shaft.

The New Deep Level Shaft.

A point of attack of the very greatest importance to the company is the new deep level vertical shaft which is of seven compartments and is expected to intersect the reef at a depth of about 2,500 feet. At present the shaft is down to 1,300 feet and sinking is proceeding at the rate of approximately 60 feet per month. This shaft will exploit the deeper areas of the property at a depth corresponding to that which will be opened up by the two shafts of the Main Reef West. Great importance attaches to the reef disclosures from this shaft. It is designed to exploit a very large deep level area and through it a big tonnage will be hauled. Should developments from this shaft prove satisfactory, the question of increasing the plant will doubtless be considered.

Main Reef West; Forty-Ton Ore Truck.

The Ore Reserves.

At the date of the last annual report—that is, for the year ending June 30, 1911—the "payable" ore reserves in the mine amounted to 516,890 tons of an average assay value of 6·7 dwts. per ton over a width of 48 inches. At the end of the year they totalled 581,450 tons of approximately the same value.

It should be borne in mind that in this mine the amount of footage driven has been very high indeed in proportion to the amount of "pay" ore exposed, as large sections of broken and unprofitable ground, especially in the eastern section, have been exploited with little augmentation of profitable ore reserves. Some idea of the extent of footage driven, sunk and risen may be gained from the fact that up to the end of June last 32·3 miles of development had been accomplished. During the quarter ending September 30th a further 6,360 feet were developed.

The Joint Mill and Cyanide Works.

The joint reduction and treatment plants of the Consolidated Main Reef and Main Reef West are situated a little to the east of the west incline shaft of the Consolidated Main Reef Company. There are here 240 stamps, 6 tube mills, and the necessary cyanide treatment equipment. Each company possesses 120 stamps and 3 tube mills, the monthly crushing capacity of each company being about 25,000 tons, or 600,000 tons per annum for the joint equipment. At the present time, however, there are only being crushed about 15,000 tons per month by the Consolidated Main Reef Company and 14,000 tons per month by the Main Reef West, so that the joint equipment is only dealing with 58 per cent. of its full ore capacity.

As to Labour.

In this connection attention may be directed to the labour shortage at the two mines, and it may be remarked that with a view to improving matters in this direction the management have obtained valuable assistance from the use of small rock drills. The Consolidated Main Reef, on account of its being an old established outcrop venture, has always been a favourite with natives. This company's complement is about 3,100, and it is at present possessed of between 2,100 and 2,200. Moreover, boys are coming in well. Last month 376 natives were obtained for the Main Reef compound, and there was a wastage of 200, or a net gain of 176, whilst since the beginning of this month 125 boys have presented themselves for service. On the western side of the battery there is room for erection of a further 80 stamps, 40 on each side of the mill, and provided developments in the two mines warrant it such augmentation of reduction equipment will doubtless be carried out in the not far distant future.

We here insert a table stating the most recent productive results secured by this concern:

Period.	Tons Milled.	Yield. £	Yield. per ton.	Expenditure. £	Expenditure. per ton.	Profit. £	Profit. per ton
Year ending							
June 30	252,485	360,211	28/ 6	272,237	21/ 7	87,974	6/11
Quarter ending							
Sept. 30	67,149	93,965	28/ 0	70,515	21/ 0	23,450	7/ 0
October	18,930	28,273	29/10	20,851	22/ 0	7,039	7/ 5
November	17,209	25,988	30/ 2	19,299	22/ 5	6,276	7/ 4
December	15,040	24,276	31/ 2	17,222	22/11	6,500	8/ 8

Finances, Life and General Prospects.

Before concluding this review of the Consolidated Main Reef some examination of the financial circumstances of the company, of the outlook regarding life and the general prospects of the concern as indicated by the present conditions is called for. Firstly, attention may be directed to the fact that the balance sheet for the year ending June 30, 1911, showed that the Company had cash on hand on fixed deposit with bankers in London, etc., amounting to £236,397, whilst £36,459 remained on dividends unpaid, etc. Evidently the Company is in a position to take advantage of any important improvement in the underground position by the erection of further reduction and treatment plant, thus increasing the revenue and profits of the mine, and by reducing the cost of working bringing a substantial low grade tonnage within the realm of profitable value. As to life, this Company, with its absorbed areas of the now defunct Main Reef Deep and Main Reef East Companies, seems on its present basis of exhaustion to have before it a period of productivity amounting to approximately fifty years, and this might well be increased were better development results secured in the eastern end of the property. Of course an augmentation of reduction plant would increase the rate of exhaustion, but in any case the Company has clearly a large amount of ore to be developed and milled, and in view of recent developments one is justified in looking forward to the earning of somewhat larger profits in the near future than have of late prevailed.

A View of the Joint Reduction Plant.

II.—Main Reef West, Ltd.

The principal point of interest at the Main Reef West to-day is the far western shaft, which has recently struck reef at the seventh level. The very serviceable and compact installation, with large ore bins, rock breakers, and sorting plant, at this shaft is not yet quite completed, but will be at a very early date. This shaft is to be sunk to a vertical depth of 3,000 feet, or possibly more, the idea being to facilitate rapid hoisting and obviate the haulage difficulties incidental to a compound shaft. Cross-cuts will be carried to the reef and main loading bins installed at main levels. Ore reserves in the Main Reef West at the end of last year amounted to 670,890 tons, as compared with 628,260 tons at the end of June last. The long winze from the seventh level will be through in April next, when the management will be able rapidly to increase ore reserves. During the quarter ending September last, 3,398 feet were driven, sunk, and risen in the mine.

Recent Developments.

The exploitation to date points to the existence of a block of good ground extending for 3,300 feet from west to east. Towards the Bantjes Consolidated Mines values fall off, and the most profitable section in the property lies in a compact block adjacent to the Consolidated Main Reef boundary. Another point to be borne in mind in regard to the Main Reef West is that the South Reef in the Aurora West is of good value, and although this body has not so far been of much value to the Main Reef West, it may prove an important asset in the future. During the quarter ending September last 65 feet were driven on the South Reef in the Main Reef West, the assay value being 3·9 dwts. over 36 in. The completion of the work at the new Western Shaft marks the commencement of a new era in the history of the Main Reef West. Of course, a sufficiency of native labour is required in order to reap the full benefit from the work carried out in the western portion, but in order to supply the battery with an increased amount of ore from the two shafts of the Main Reef West, the railway gauge is being increased from 2 ft. to 3 ft. 6 in., and large ore trucks of 40 tons capacity, similar to those in use at Randfontein, have been purchased.

Main Reef West, Ltd. The Western Shaft.

Labour at the Main Reef West.

The Main Reef West Company is not nearly so favourably situated with regard to native labour as the "Consolidated," and at present 70 stamps out of 120 erected are at work. The labour complement of the company is placed at 2,807, and there are at present 1,464, or only about 50 per cent., on the books of the company. Signs of improvement in regard to labour are, however, not at present wanting. With only one shaft at work, the largest tonnage the company has so far sent to the mill in one month is 18,000 tons, but now that the new western shaft is practically in commission, the company will (provided more native labour is available) be able largely to increase this tonnage.

General Prospects.

The property of the Main Reef West, Limited, consists of 564 claims, with an actual area of 549·6 mining claims. The area is a large one, and without indulging in any hard and fast estimates (such calculations are seldom substantiated by actual results in regard to Witwatersrand Mining) it is patent that the life of this concern on its present stamping basis is rather above than below the average for Rand concerns. At the same time, it must be borne in mind that an increase in stamping equipment may well be sanctioned should further development results justify such a policy, and from the manner in which the mine has opened up to date—only about 8 per cent. of the ore so far exploited has proved unprofitable—there is every reason for believing that such a course will be warranted.

Recent Returns.

It will here be of interest to note the salient productive features recorded in the more recent reports of the company. The following table sets these forth in the same manner that the Consolidated Main Reef Company's latest returns have been recorded.

Period.	Tons Milled.	Yield. £	Yield. per ton.	Expenditure. £	Expenditure. per ton.	Profit. £	Profit. per ton
Year ending							
June 30	196.391	338,798	31 6	198,924	20/3	139,874	14/ 3
Quarter ending							
Sept. 30	45,090	74.738	32/ 2	48,685	21/7	26,053	11/ 7
October	15,012	24.743	33/ 0	16,706	21/9	8,037	10/ 8
Nov. ...	14,905	24.556	32/11	16,124	21/8	8,080	10/10
Dec. ..	13,367	23,244	33/10	15,469	23/2	7,278	10/11

The Financial Position.

The last balance sheet of the company, namely, that submitted to shareholders on September 6th, 1911, and covering the year ending 30th June, 1911, shows a balance to be carried forward of £19,684 15s. 2d. from the appropriation account and an unexpended balance of the capital provided of £106,085 6s. 3d. Since the conclusion of the last financial year, and up to the end of December, a working profit of £49,448 was earned. The outlook for the company may be described as encouraging. Exploitation of the western section from the new vertical shaft will open up new ground, for which there is every reason to entertain favourable anticipations. No doubt steps will be taken to enlarge the scope and productive basis of the company at some future date, and with an improvement in the labour supply the company could apparently earn substantially larger profits almost immediately

The Joint Cyanide Plant.

East Rand Proprietary Mines.

The results of last month's operations at the East Rand Proprietary Mines are as follows:—820 stamps milled 164,550 tons; 57,340 ounces recovered from all sources; £67,108 profit for the month. The clean-up of the cyanide works commenced on the morning of January 26 and was completed on January 28; the clean-up of the mills commenced on the morning of January 30 was completed the same day. In view of opinion expressed by shareholders gold reserves have been abolished, and the estimated value of the reserve, viz., £74,638, has been transferred to profit and loss account for the year 1911,

CONGO MINERAL PROSPECTS IN 1911.

A Review of Prospecting and Mining Development During the Year.

THE year 1911 was remarkable for the activity manifested to develop new African fields of mining in general, and specially parts that were only a few years ago thought to be quite inaccessible to white man's enterprise. The prosperity of Rhodesia, the immediate neighbour of the Congo Belge on the south, has no doubt stood sponsor to induce the extraordinary activity put into the development of the Katanga copper resources. No one, we venture to say, will to-day be found to dispute that the copper wealth of Katanga is enormous, with its millions of tons of ores ready to be quarried out in great opencasts, and of sufficient richness to satisfy or allure the most cautious. The advent of the rail in the Congo from Rhodesia has heralded its recognition as a field of mining importance, and probably one of great future. Copper smelting works have been erected and started at the Star of the Congo mine, and what was a few years ago a semi-wilderness has now become the seat of an important industry in the nascent stage. A new town next to it, Elisabethville, has sprung up, with all its adjuncts, and in close touch with the rest of South Africa by rail. The character of the new field is more distinctly cosmopolitan—or even English—than Belgian, and is not without giving anxiety to the present authorities, but in our days of internationalism and cosmopolitan finances this should not distress those interested in the mining. True, the insufficient knowledge of prevailing conditions and the usual initial difficulties encountered in making the start have brought some disappointments, the economical results not being nearly so satisfactory as was anticipated, and the first estimates not being verified in point of costs, but we can take it that the problem of profitable reduction of the inexhaustible copper ores has only begun to be tackled in earnest. The important factors influencing cost are mostly fuel and transport. The first—fuel—will be very materially improved by the use of Wankie coke, or even some nearer source, and possibly local charcoal, though of this it is doubtful if enough could be depended upon. The transport facilities will to a very large extent be controlled by the mining interest, who can make it suit their ends on either side, and by their Lobito road check effectively any tendency to excessive rating on the rail account. In any case the problem is one which metallurgy has by no means pronounced insoluable, but, on the contrary, tackled in a most hopeful spirit. Besides the immense copper resources of Katanga, one must reckon with the Busanga tin belt, which is one of considerable value and possibility, but has hardly been touched so far on account of sleeping sickness. In gold, Katanga can only so far boast of its Ruwe gold mine, now temporarily closed, and which was never of very much account for a large company. However, it may here be as well to say that all has not been as yet discovered, and it is a remarkable thing that gold has been reported as found in no less than two hundred different places in the Congo, from the extreme end of Kasai round to the Tanganyika Lake and eastern frontier, and north of the Aruwimi. Of all these finds, so far, no more than a half dozen places have as yet been found payable, or even exploitable, on an industrial scale. Many of these placers would no doubt be fair propositions for small parties of miners, but when they are to be taken as assets of very large companies (as most Congo exploring companies are), it is another affair not so inviting. Most of the gold found so far is alluvial, and instances of lodes of veins of quartz are extremely rare, none so far being found worth exploiting, but somehow, from indications received from prospectors, it is possible that some very large low-grade propositions exist in the country where the crystalline series abut on newer geological horizons. Of the gold mines the Government mines of Kilo are still leading by a long way ahead of others. Kilo is a large alluvial proposition, situated in the eastern part near Lake Albert. It produced probably considerably over a ton (1,200 kilos, over £120,000) last year, and may yet increase its output if labour comes forward freely under the new regime. It employs at present about 3,500 natives and 15 Europeans. The deposit is rich but costs are very high, owing partly to the native labour being very unsatisfactory, and also probably from enjoying too much administration, as most Government concerns do. The new discoveries surrounding Kilo, such as Arebi, Vankerkville, etc., also Government properties, have not as yet entered the output stage. The dredger sent out four years ago for the Shari river is still in the building period, and will prove, perhaps, a disappointment. The Foreminiere, a very large mining concern of cosmopolitan financial aspect, but American in its direction, seems to have done good prospect work in the Aruwimi and at the Jele river, Rubi district, but the results are not known. The same company, which has very extensive prospecting areas alt over the Congo (granted lavishly by the late Leopoldian regime) has also been rewarded by the find of diamonds, as many as 175 stones being lately delivered in New York, the results of their search in the Dilolo district. Diamonds have been found again in the Kundulungu ranges in magmas similar to the Kimberley blue, and frequently in the rivers and streams of the Kasai part. There is hope for the Congo yet there. Not less than seven prospecting Belgian companies have been formed to search for minerals—mostly in Katanga—but none as yet seem to have had much success. A very large railway concern, closely affiliated to the Government, has for some time also been diligently searching their vast concession, comprising millions of hectares, but without giving any information of finds. It is said that good oil shale deposits have been found near Stanleyville, and will probably be put into exploitation later. Some of their expeditions to prospect have, it is reported, also discovered gold, but the values are not stated, and the company is reticent of information even to its own shareholders. No coal of any calorific value has as yet been discovered in the Belgian colony. In Katanga the coal formation has been found practically valueless for economic results. Graphite of impure character has been reported also in Katanga, and in the upper parts of Lualaba, but no further definite value put upon it. The geological aspect of the country is beginning, however, to be thoroughly understood, and searches, conducted on a more scientific basis than formerly. It is not improbable, and is even very likely, that the Congo will eventually turn out to be a very important mining country, even if we do not take Katanga into consideration.—*The Mining Journal.*

Brakpan Mines.

The directors' report of the results attained by the Brakpan Mines during the December quarter shows that the linear development for the quarter amounted to 1,831 feet, of which 1,674 feet were on reef averaging 10.2 dwts. over a reef width of 42.1 inches.

ORE TREATMENT.

The following were the results obtained from reduction operations during the Quarter:—Milling: Ore hoisted from mine, 129,431 tons; Ore from surface dump, 12,729 tons; Ore sent to crushing and sorting station, 142,665 tons; Percentage of waste sorted out, 14.79 per cent.; Average number of stamps running, 105 stamps; Net running time, 89.18 days; Ore milled, 121,867 tons; Milling duty per stamp per 24 hours, 13.01 tons; Yield in fine gold, 21.026 ozs.; Yield per ton milled in fine gold, 3.451 dwt. Cyaniding: Tons treated, 120,170 tons; Yield in fine gold, 18,934 ozs.; Yield per ton treated in fine gold, 3.151 dwt. Summary: Yield in fine gold (Mill), 21,026 ozs., dwts. per ton milled, 3.451; cyanide works, 18,934 ozs.; dwts. per ton milled, 3.107; totals, 39.960 ozs., dwts. per ton milled 6.558. Working costs, £107.517 6s. 7d. (17s. 8d. per ton); working profit, £60.372 5s. 1d. (9s. 11d. per ton); working receipts, £167.889 11s. 8d. (27s. 7d. per ton).

The following intimation to shareholders, explanatory of the expenditure incurred in excess of the working capital provided and the interest earned thereon, was issued through the press in Johannesburg and in Europe on December 22, 1911:—The Board of Directors intimate, for the information of shareholders, that the deficit in the cash resources of the company upon reaching the productive stage, to which reference was made at the last annual general meeting, has proved to be somewhat larger than was then contemplated. It is estimated that those resources will, when the equipment programme is completed within the next few months, have been exceeded by an approximate amount of £150,000, which sum, however, includes certain holdings (shares incidental to the company's business, stores, etc.), which may be considered as cash assets. The main reasons for the excess expenditure are: (1) The previously ascertained excess of the original estimates over cash provided (mainly occasioned by the enlargement of the reduction plant), and the cost of building up the necessary labour force in advance of requirements; (2) Additional equipment and accommodation, both below and above ground, found necessary as the final preparatory stages were being reached; and (3) The extra outlay incurred during April and May in current running expenses through the two months' delay in the commencement of crushing operations, caused by circumstances outside the control of the company. The working profits to the end of the year 1911 will total in respect of the seven months some £110,000, less the amount of the Government profits tax, estimated at about £9,000; and the directors have decided, after very careful consideration, that the soundest policy to pursue, in all the circumstances, is to devote the profits to the end of the year towards the liquidation of the company's obligations, of which some £50,000 will then only remain unprovided for. It is intended not to ear-mark the profits from the commencement of the New Year, and the directors have every hope of being in a position to declare a dividend in the near future, whilst at the same time gradually extinguishing the balance of the company's indebtedness.

Springs Mines.

The report of the directors of the Springs Mines for the December quarter shows that the north shaft has been sunk a further 430 feet and timbered 442 feet during the quarter, making the total depth 1,572 feet, of which 1,525 feet are timbered. The south shaft has been sunk an additional 238 feet and timbered 265 feet, making the total depth at the end of the quarter 1.301 ft., of which 1.277 ft. are timbered. The pump station and sump are now about completed. The Rand Water Board commenced taking water from the mine on December 15, last.

THE MINING EXHIBITION.

An Interesting and Varied Collection—From a Plumb-bob to a Nissen Stamp—Respirators, Ropes and Rock Drills.

WITH great trouble a collection has been gathered together which is creditable to those who have been responsible for the enterprise. At the same time it is not so complete or comprehensive as they would wish, and it may be hoped that the example of the exhibitors, who have been prompt to take advantage of their opportunitiy, may be followed without delay by those, and they must be numerous, who have objects of interest and instruction, such as natural products, crude or manufactured, plans, diagrams, photographs, or models relating to mining or metallurgical operations, machinery and apparatus of the same class, and all the various articles which are suitable for exhibition purposes. It is possible that a difficulty may be found at this stage in the matter of space, but we feel sure that those who visit the display will recognise that it affords an opportunity to inventors, engineers and manufacturers, which is too valuable to be disregarded. The exhibits already staged include such widely different examples as machine drills, rescue apparatus, battery stamps, surveying instruments and appliances, candle savers, dust catchers and allayers, respirators, magnetic separators and mill utensils. There are excellent models of tramways for sand discharge, aerial and otherwise, shaft timbering, ventilating doors, and air fans for drives. Among the firms who are represented one notices the names of Messrs. Fraser and Chalmers, Bleichert, Henley, and Koppel, their exhibits being respectively cam shaft couplings, etc., aerial tramways, cables for electrical purposes, Mannesman tapes and joints, and Sulzer pumps. A Butters' vacuum filter leaf is an interesting object, and not less so a set of Stadler's laboratory sifting apparatus. Messrs. Cradock show samples of steel rope. Two interesting models of magnetic separating apparatus are prominent, one by Mr. Andrew F. Crosse, already discussed in this journal, and another by Mr. T. Coppin, which has been in use at the Porges Randfontein mill, driven by a water wheel, and which for the past seven months has extracted an average of 220 lbs. of steel and iron particles per day from the pulp of a 100-stamp mill. The exhibit which shows the invention and development of the Stobie Respirator, is worthy of special mention, and includes four types of respirator, which illustrate the progress of the improvements made. A beautiful collection of Verdite ornaments and jewellery will not fail to attract attention. Dust catchers and allayers are shown by Messrs. D. McLachlan and Thorne, among others, the features of which is the use of compressed air to collect the dust into special receptacles. A collection of ores has been lent by the Chemical, Metallurgical and Mining Society. The list of exhibits is a long one, but we cannot conclude this brief reference without mentioning the surveying appliances and instruments of which Mr. Tonnesen is the inventor. His papers on the subject of stope measurements will be remembered as showing the great interest he takes in the art of special measurements.

The occasion of the exhibition seems an opportune moment to refer to the desirability of erecting some memorial to the men whose inventive genius and practical ability laid the basis of the present day greatness of the Rand and established firmly and securely the foundations of its future prosperity. Some beginning in this direction might be made in connection with the exhibition itself, by means of diagrams or models, illustrating the progress of cyaniding here, and suggestions should be asked for with regard to a more lasting memorial.

The discovery of the cyanide process must be regarded as one of the greatest industrial achievements of modern times. There can be no doubt that cyaniding will be hailed by coming generations for its importance, not so much to the mineral industries directly, as for its bearing upon world economies in rendering possible a greatly increased output of gold and silver year after year. In the comparatively brief 20-year interval since 1891, when Messrs. McArthur and Forrest brought the modern perfected cyanide process prominently before the mining world, the output of gold has amounted to 284,081,289 fine ounces. This is a most astonishing showing, especially when compared with a total output of 401,311,148 fine ounces for the entire 397 years previous—from 1493 to 1890.

Swaziland Corporation.

It is announced that in consequence of the results revealed by recent development work on the properties, Mr. G. F. Heath, A.R.S.M., A.I.M.M., has been appointed by the Board to examine them thoroughly and advise as to future policy.

Worcester Gold Mining Co.

The Worcester Exploration and Gold Mining Company's report for January gives the following details of crushing done; 4,200 tons during 22·13 days; yield from mill, 884·471 ozs.; yield from cyanide, 345·447 ozs.; total yield, 1,229.918 ozs., valued at £5,196 8s. 1d. The approximate profit is £1,850.

The Zaaiplaats Tin Mining Company, Ltd.

The following is an extract from the Mine Manager's Report for the month of January:—Mill ran 28 days; tons ore crushed, 2,650 tons; duty per stamp per 24 hours, 3.309 tons; average yield concentrates, 5.471 per cent.; concentrates won, 145 tons; average value concentrates, 69 per cent. tin; total development risen, driven and sunk, 294 feet; tons ore mined, 2,496 tons; tons ore taken from surface dumps, 154 tons; estimated cost, not including realisation charges, £2,850. The natives are coming in freely; there are now 700 in the compound.

Nigel G.M. Co.

During January 75 stamps ran at the Nigel, crushing 14,000 tons of ore. The output was 4,486 ozs., value £19,055, and the profit £3,136.

New Kleinfontein.

The following are particulars of the result of operations for January:—Stamps, 220; tons milled, 38,800; fine ounces output declared, 12,841; value, less cost of realisation, £53,879; working costs, per ton, 19s. 6d.; profit declared, £16,115; capital expenditure, £9,866; reserve gold in hand, nil. The board of directors has decided to abolish the gold reserve, and the balance in hand at December 31 has been included in the annual accounts for the year 1911. In connection with decreased profits shareholders are referred to the official notice published in the middle of December, as follows: Development results during the year have been below the past average of the mine, but it must be pointed out that an undue proportion of development has been unavoidable in the western or poorer section. Anticipated towards end 1912 proportion of development in each section of old mine will become normal and this should have improved effect on grade developed, as also should the opening up of the Orient section. Anticipated that the grade to the mill during the year 1912 will be about 7 dwts. This may result in decreased profits for the first few months until increased tonnage treated. Such increase naturally depends upon sufficient labour being available. In order to make some provision for capital expenditure it has been found necessary to reduce dividend for the half-year ending December 31 to 7½ per cent. It is an impossibility at this stage to forecast, but does not appear likely dividend 1912 can exceed 15 per cent. if ample provision made for capital expenditure, as it is desirable to keep company's indebtedness as far as possible within the present limits of bank loan of £200,000.

THE PLIGHT OF THE SOUTH AFRICAN COAL INDUSTRY.

Labour and Railway Difficulties Reviewed—A Natal View—Extremely Gloomy Outlook.

At a meeting of the Cambrian Collieries, held at Durban this week, the chairman, Mr. C. G. Smith, said that the only solution of the difficulty of obtaining unskilled labour lay in the direction of an agreement amongst all industrialists and mine-owners in South Africa proper. A labour association should be formed and endeavour made to induce the Government to establish labour bureaux at various centres where the native could sell his labour at a fair market price without the assistance of labour agents. Proceeding, Mr. Smith said that practically every colliery in this country was over-capitalised, that was to say, the values of lands and minerals appeared in their respective balance sheets at far too high a level. He also said that unless something definite was done in the direction of encouraging the formation of a coal association for the regulation of prices and the supply of coal, the outlook for coal propositions in this country was extremely gloomy. They had hopes, however, of better counsels prevailing, and that the coal-owners would see it was to their advantage to make common cause and agree to the formation of an association, which would not only govern the prices of coal, but also regulate the supply and obviate excessive competition between agents and cutting of prices. Mr. Smith also referred to the railage of coal, and said that while the supply of trucks in 1911 was a distirct improvement on that of previous years, they felt that the Administration had had power to make or mar any particular company, and autocratic and somewhat ruthless methods adopted by the railways were a constant source of uneasiness amongst those who were closely in touch with the working of the collieries in Natal and the Transvaal. He personally had experienced nothing but the greatest courtesy and assistance from the railway officials, but it was the "power behind the throne" that caused the colliery owners the gravest concern, and they looked with alarm upon the practically unlimited power that rested with those who controlled the S.A.R. As a matter of fact, under existing conditions, it would be infinitely better for the Government to expropriate all coal mines at present producing. The railways were the largest customers, and the coal industry, which might legitimately be termed a national one, was dying by a process of attrition, mostly from within. Their coal export trade could not expand unless Government gave them reduced rates, and, assuming that the bunkering trade had about reached its maximum, the only outlet was in the direction of export trade. Natal and the Transvaal, through the stupidity of their coal-owners, sold bunker coal at cost price, and the Railway Administration had refused to assist the export trade by reducing the export carriage from the mines to the ports for the purpose of supporting the export trade that would, under such conditions, assuredly grow to enormous proportions. Unless the coal-owners of the Transvaal and Natal combined to raise prices to a reasonable level and incidentally raised prices also for railway requirements, the process of attrition would continue, and most of the producing mines would be followed into liquidation.

New Rietfontein.

There was an increase in the working costs at the New Rietfontein Mine for the December quarter, and as a result the gross profit (£11,627) was slightly under that realised for the preceding three months. The increased costs are largely due to the receipt of a batch of untrained natives, whose services for the first few weeks after their arrival were unremunerative. The development is being kept ahead of the mill, and just at the end of December the reef was picked up in a cross-cut from the 12th level No. 1 shaft. This shaft is situated in the western section of the property, and the pay reef has not been located below the 8th level owing to a down-throw fault of some 280 feet in extent. The strike is of considerable importance in view of the large area of ground affected.

East Rand Proprietary Mines.

The report on the operations of the East Rand Proprietary Mines for the three months ended the 31st of December shows that from 500,985 tons milled there was a net working profit of £178,992. The revenue from the treatment of current ore was £650,773, and from accumulated slimes £16,325, making together a total of £667,098. Working expenditure absorbed £488,105 or 19s. 5.83d. per ton, which left a working profit of £178,992, or 7s. 1.747d. per ton. On shaft sinking the number of feet sunk was 632. On development 7,951ft. were driven, risen and sunk. The footage sampled was 4,551 feet, the average width of reef being 24.7ins. of an average assay value on reef width of 11.8 dwts. per ton. The expenditure on capital account for the quarter amounted to £32,877, of which amount the sum of £21,064 has been spent on the erection of the new crusher station. The expenditure on shaft sinking was £12,331. At the end of December there were 17,898 ozs. of gold held in reserve.

Rooiberg Minerals.

The following are particulars of the estimated result of operations on this Company's property for the month of January, 1912:—Stamps, 10; days run, 30; milled, 1,542 short tons; concentrates, 59 long tons; average assay value nett tin, 69 per cent.; net capital expenditure, £6,795; estimated profit, £2,424; adjustments due to fluctuations in the price of tin, to be added to estimated profit in respect of September shipments, £746; gross profit for the month, £3,170. The concentrates in reserve at 31st January, 1912, amounted to 20 tons (2,240lbs.), of a net value of £1,895.

Government Mining Areas.

The following report on the operations of the company for the six months ended 31st December, 1911, has been issued:—The north-east shaft was sunk 779 feet to a total depth of 1,420 feet. The shaft passed through alternate bands of slate and quartzite to a depth of 1,080 feet, when a dyke was encountered, which had a thickness of 125 feet. Below this dyke the shaft was in quartzite for 85 feet, and at 1,300 feet amygdaloidal diabase was intersected. The hard nature of this rock retarded sinking to a considerable extent, and the footage for December only amounted to 73 feet, as compared with an average of 141 feet for the other five months of the half-year. The shaft was still in diabase at the end of December. The north-west shaft was sunk 841 feet to a total depth of 1,609 feet. The shaft was in slate formation to a depth of 1,070 feet, when quartzite was intersected and continued for a distance of 258 feet. Two stringers of reef were encountered between 1,390 and 1,400 feet. The shaft passed into the amygdaloidal diabase at 1,410 feet, and this immediately reduced the rate of sinking by about 50 per cent. Fortunately this formation was passed through at 1,509 feet, and a normal rate of sinking was resumed. At 1,536 feet four feet of reef matter was exposed. The underlying formation consisted of pebbly quartzite, in which the shaft continued until the end of the year. The south-east shaft was sunk 924 feet, to a total depth of 1,388 feet. Excellent progress has been made in this shaft throughout the period under review. The smallest footage sunk in any one month was 138 feet, and the highest 170 feet. The formation passed through consisted of quartzite, with alternate bands of reef matter, one of these bands measuring 26 feet in thickness. The south-west shaft was sunk 397 feet to a total depth of 477 feet. Sinking, which was suspended in May last, was resumed in August as a result of a slight improvement in the native labour position. Operations have been carried on steadily from that time. Sinking proceeded slowly through the dolomite, which passed out of the shaft at 140 feet. From that point the formation has consisted of quartzite, with occasional bands of reef matter, one of which measured 23 feet in thickness. Towards the end of the year, and as the native labour force improved, better progress has been made with the shaft. During December 124 feet were sunk. Very little new construction work was put in hand during the period covered by this report. The two 50-drill air compressors have been delivered, and their erection is well advanced. A start was also made with the construction of the system of railway sidings to the shafts. The erection of twelve additional cottages has been commenced. Four of these will be situated near the northern shafts and eight near the southern shafts. The native labour position improved during the latter part of the year, and this has also helped towards quicker sinking. It should be mentioned that the reefs intersected in the various shafts were systematically sampled and assayed, but, as was anticipated, none of them contained payable values.

THE PROBLEM OF THE POTGIETERSRUST TIN FIELDS.

Irregularity Compensated by High Values—The Zone Fallacy—Zaaiplaats Ore-bodies Indicate Great Depth.

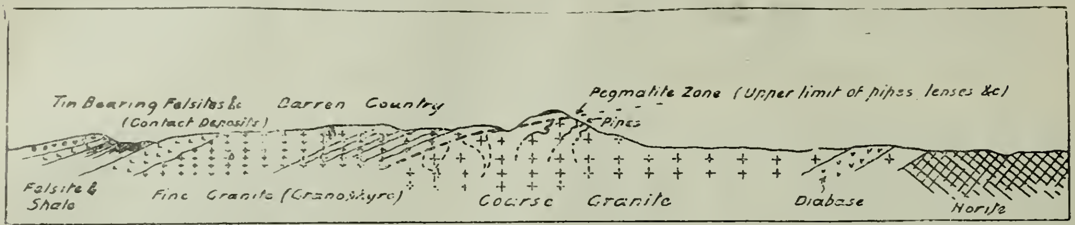
In his somewhat interesting, if not altogether up-to-date, book on "Tin Deposits of the World," Mr. Sydney Fawns refers thus to the character of mining operations in the Herberton tin field of Queensland:—"The irregular manner of occurrence of the ore in these lodes has had a marked influence on the character of the mining in this district. In the case of mineral matter introduced along true fissures, extending with comparative regularity over considerable distances both horizontally and vertically, and carrying lode material between well-defined walls, or impregnating the country rock more or less evenly on either side a certain amount of confidence can be displayed in prospecting and development work. If the lode becomes too narrow or too poor for profitable work, development work is pushed on either horizontally or in depth along the line of fissure, with a fair prospect of the lode again widening or improving in value along the same line. Where, however, no such regularity of disposition of the ore exists, as in the case of most of the Herberton lodes, only the general run of the ore body can be followed as a guide for fresh prospecting work. . . The want of continuity of the deposits (Herberton makes the economic location and proving of fresh ore reserves, in advance of those already developed and in course of extraction, a matter of the greatest importance. Where the lodes follow no true course, as such is understood with true fissure lodes, and where the break in the continuity is not due to the faulting of the country subsequent to the formation of the ore body, it is useless to attempt to apply rules of procedure for finding lost lodes that have been framed to suit well defined deposits with definite course and dip. The only course open seems to be that universally adopted by the experienced tin miner—namely, to follow the tin as far as it will lead in the hopes of its making into another body of ore, and when this can no longer be done to use the individual judgment in prospecting in the most likely place in the most economic manner that can be employed."

IRREGULARITY AND ITS COMPENSATIONS.

From this it is evident that the Potgietersrust tin field is not the only region where the ore bodies are characterised by irregularity in the matter of occurrence and dimensions. It may be questioned, however, whether the amount of dead work necessary to be accomplished per ton of ore obtained is considerably greater in the case of these irregular workable deposits than in that of those where the ore bodies lie along more or less well defined planes. In some of the best known and oldest tin mines in the world a large percentage of waste rock has to be mined in one way or another for every fathom of payable ore crushed, and where irregularity is a feature of the occurrence of tin ores unusually high values are commonly an off-set to the disadvantages of driving in barren country. Much depends, of course, upon the ability of the miner to form reliable judgments with regard to the evidence or "clues" obtainable both above and below ground, and this is a gift which is only acquired after long experience. Although, actually, the percentage of dead ground between payable ore bodies may not be unduly out of proportion, it may in practical operations amount to a very great deal by reason of the difficulty or impossibility of finding useful "pointers." So far, such disadvantages as have followed upon irregularities in the occurrence and size of the ore bodies at the two chief mining centres of the Potgietersrust area have been abundantly compensated for by the extreme richness of the masses of ore discovered. At Zaaiplaats these masses have become enlarged and maintain their high value; on the ground held by the adjoining Company, The Transvaal Consolidated Lands, the ore bodies have become to some extent exhausted, and some uncertainty prevails as to the chances of finding others to replace them. Experience appears to offer no guidance, except in a very broad sort of way, and the boreholes which are now being put down there are being sunk in an altogether tentative sort of way. Boring is the only method that can prudently be adopted, under the circumstances, and a speculative course of procedure will probably not fail to obtain useful information provided anything valuable lies within the area prospected. This is, of course, the problematical point, but there is no reason whatever to suppose that all the existing rich pipes and flats have been already met with.

A ZONE OF PIPES.

The belief is held by some that a comparatively narrow zone of pipes runs across the country from Solomon's Temple to Groenvlei and that the ore bodies worked by the Zaaiplaats and Groenfontein people lies within the boundaries of this zone. It is possible that this belief of a zone of tin bearing granite has had its origin in the following statement which occurs on p. 42 of Memoir No. 4 of the Geological Survey, that dealing with "The Geology of the Tin Fields." Describing the tin country to the north-west of Potgietersrust, the authors of the memoir say, *inter alia*:—"The main features of the tin field are as follows: The principal deposits of cassiterite are found along a fairly well defined belt or zone in the Red Granite, extending from the north-east corner of Zaaiplaats No. 2086, in a general south-easterly direction across the northern portion of Roodepoort No. 813, and the southern corner of Groenfontein No. 871, thence trending in a slightly more southerly direction across the west corner of Sterkwater No. 1549, into the northern portion of Solomon's Temple No. 1014. The width of the tin-bearing zone varies considerably, the average being probably about a quarter of a mile. On Roodepoort, Groenfontein and Sterkwater it would probably not exceed 1,500 feet. On the south-west side it is limited abruptly by the line of quartz and pegmatite veins already referred to, though on the north-east it does not appear to be sharply defined by any very well marked and conspicuous geological boundary, the deposits becoming, as a rule, smaller and fewer as one passes further from the line of outcrop of the pegmatite." It is added that an extension of the belt has been proved, by prospecting, into Groenvlei and Appingendam to the north-west, and into Welgevonden, Welgelegen and Grootrivier to the south-east, although the mode of occurrence of the cassiterite deposits on these extensions is usually of quite a different character to that of the main portion of the zone. The memoir was published in 1909, and the information which it contains was collected some months previously. Since that date a great deal of information has been obtained by prospecting and in other ways, which goes to show that the idea of a narrow zone of ore bodies is not in accordance with facts. Indeed a careful reading of the remainder of the memoir itself suggests the explanation that what was considered a zone of mineralised rock was really the outcrop, so to say, of a greater extension below. We took occasion to point this out at the time. It is to be regretted that the matter was not more clearly put in the memoir itself, for as it stands the statement quoted is equivalent to the remark that the payable gold bodies along the Witwatersrand are found along a zone a few feet wide which runs through the farms Doornfontein, Turffontein, Langlaagte, etc. Experience has proved that in the Potgietersrust tin field the tin is found in the mass of medium grained granite which lies between the coarse granite below and pseudo-bedded red granophyre above, and that it extends downwards indefinitely into the coarse granite. The pegmatite roughly marks the line of contact between the tin carrying granite below and the more or less barren granite above, and since these granites dip westward after the manner of a sedimentary formation, the granophyric granite and pegmatite may be considered as forming the hanging wall of the tin-bearing granite. The accompanying ideal diagrammatic sketch will make these points more clear.



Diagrammatic sketch illustrating the geological conditions of the Potgietersrust tin field. Length of section, about eight miles.

The chief problem of the Potgietersrust tin field is how far the ore bodies, whether pipes fissures, or lenses, extend downward into the coarse granite. Obviously the only way of arriving at some knowledge on this point would be to investigate the deeper horizons of the coarse granite as exposed on the eastern slopes of the hills or in the valley still further east. This will be understood from the diagram. Prospecting operations have hitherto been confined to the upper horizons of this granite, for some reason or another, probably because there is less overburden to contend with, and practically nothing is known of the conditions which are likely to prevail in depth. It has, however, been stated that tin has been found right at the base of the enormous body of coarse granite, near the norite, as we mentioned a few weeks ago. There is no further news with regard to this find, and some people who are well acquainted with the district have told us that they feel very sceptical about the alleged find. All that can be said on this point is, that the strong and abundant masses of ore on Zaaiplaats, to take a single instance, are suggestive of continuity to great depths.

Further Evidence Wanted.

It was supposed that some knowledge of conditions in depth might be obtained from a study of the ore bodies on the farm Groenvlei, adjoining Zaaiplaats on the north-west. Here the lenses and fissures opened up lie at no great height above the Sterk River, and to the eye the level of the ground is far below that on which the Zaaiplaats pipes outcrop. A closer examination of the country, however, is sufficient to show that although there may be a considerable difference in altitude between the two points, the granite horizon of the Groenvlei workings is very little if anything lower than that from which ore is being mined at Zaaiplaats. That this is so may be seen by following the pegmatite horizon from the Government lease claims on the latter through Graumann's claims and round the top of the mountain, upon which stands the joint beacon of Mooihoek, Zaaiplaats, Roodepoort, and Groenfontein. Soon after entering Mooihoek the pegmatite dips fairly rapidly into a gorge whence it gradually rises, along the Mooihoek boundary, until it reaches and circles the peak upon which stands the joint beacon of Delagoa and Groenvlei. Then it curves round into Groenvlei, dipping towards the Valley of the Sterk. The river gorge cuts through the horizon, making a gap, but just across the river the pegmatite is found under the long hill which is so conspicuous an object in the landscape hereabouts. This hill comprises a remnant of the "hanging wall" granite, the remainder of Appingendam and a large portion of Groenvlei apparently having been denuded of it. The granite which appears at the surface on these farms, where tin deposits have been opened up, lies just below the pegmatite horizon, or at no great distance below it, and is, therefore, on the Zaaiplaats-Groenfontein horizon. There is nothing to be learnt from the workings in these north-western areas with regard to the probable conduct in depth of the famous ore bodies which lie to the south-east of them.

A Wide Tin Area.

It is, nevertheless, gratifying to find that there is no narrow zone nor belt of tin-bearing country to be found in these places, where the upper covering of barren granite has been denuded, but that wherever the surface of the underlying tin granite is exposed fissures and lenses carrying tin, sometimes in large and rich masses, continue to be found. Between the Groenvlei main workings and those on Appingendam, known as Trevethen's, in which a fissure or series of fissures carrying tin in promising quantities are found, there is a distance of perhaps two miles at least, nearly at right angles to the alleged zone already referred to, and right across this stretch of country, at intervals, bodies of ore of various kinds have been opened up. Laterally then, along the dip of the granite there seems no reason to assume any limit to its mineralisation, although, from the practical point of view, it is limited by the edges of the overlying granophyre, except in these cases where boreholes or exploratory drives are able to follow it economically. At a higher horizon, above the more or less barren "hanging wall" granite, comes the granite felsite contact and here again ore bodies are found. A section taken from the Lower Waterberg rocks above to the base of the coarse granite shows, thus, two fairly well defined ore bearing horizons. With regard to the upper one, it would appear that the tin-bearing gases rose from the granophyre, and were deposited in and near the felsites. The deposits constitute, in a word, an ore-bearing crust of indefinite thickness. In the memoir of the Geological Survey quoted from at the beginning of these notes, it is suggested that the granophyre is a later intrusion than that of the main mass of coarse granite underlying it. This seems probable, and the existence of two ore-bearing horizons becomes more intelligible on this assumption. Whether the lower tin horizon, that of the pipes and lenses, also constitutes what may be called a crust upon the coarse granite has yet to be learnt. Even if it be so, the evidence of Zaaiplaats, as we have remarked, indicate that it will be a very thick and deep crust indeed.

The Rex Gold Mines, Limited.

The following cablegram has this week been despatched to London in regard to the Rex Gold Mines, Limited, Sabie, relating to the month of January, 1912:—"Ten stamps ran 28 days, tons crushed 1,560, yielding (ozs.) 318, bullion tons of sands treated by cyanide 1331 yielding (ozs.) 293, bullion tons of slimes treated 226, yielding 98 bullion, total value of bullion from mill and cyanide estimated at £2,433, costs per ton 13s. 10d.; estimated profit, £1,352."

Transvaal G.M. Estates.

The General Manager wires that the output for the month of January, 1912, is as follows:—Central Mines, Tons crushed, 10,100; yielding, 6,017 ozs. fine gold; valued at £25,100. Elandsdrift Mine:—Tons crushed, 643; yielding, 683 ozs. fine gold; valued at £2,849. Vaalhoek Mine:—Tons crushed, 1,186; yielding, 432 ozs. fine gold; valued at £1,805. Total value of month's output, £29,754; estimated profit for the month, £15,000; gold in reserve, 1,301 ozs.

THE WATER CURE FOR THE DUST EVIL.

A Plea for a Simple and Inexpensive System of Water Supply.

[By C. Milverton Ford.]*

In view of the appalling mortality from miners' phthisis at present occurring on the Rand, Mr. Jourdan's paper serves a very good purpose in raising a discussion on the subject, as such tends to show that on many of the mines no proper system is in use to allay the dust, which is the cause of miners' phthisis, and our thanks are due to Mr. Jourdan for his excellent paper. There is, however, nothing new in the system of delivering water under pressure to allay dust when drilling dry holes in development drives at the working faces, and I am surprised that attention has not been drawn to that fact before. The system is all that Mr. Jourdan claims for it, and was put in use at least five years ago on the Geduld Proprietary Mines by Mr. H. B. White, now manager of the Sheba G.M. Co., Ltd., who does not claim to have been the first to use it, and was also in use subsequently on at least one other mine when I left the Rand. On the Geduld Mine two inch mains were laid along each level, and water under pressure was drawn from these at any point it was required, and the aperture at the end of the nozzle, which was inserted in the hole, was about 1-16th of an inch in diameter, this being found to be all that was necessary. No trouble was experienced, with the water, which was mainly shovelled up with the broken ore and sent to the surface in the trucks. That dust can be allayed in the mines is quite certain, and that, too, without any loss of time, provided that a decent system is established. There is nothing complicated about it; all that is required is one main column of pipes to go down the shaft, connected with á reservoir at surface, which supplies clean water to a series of tanks stationed at the required height above each level, and operated by ball valves. The cost of the installation would not be prohibitive to most mines on the Reef, and would be partially repaid by the increased efficiency due to saving of time in drilling, and drill sharpening, and of cost of drill steel. It would be possible in some mines where there is enough water pumped to dilute sufficiently any organic matter which may be made in the mine, and where the pumps are placed at stages not too far apart, to tap the pump column where required. This would of course save the expense of the reservoir, and steady head tanks. The point has been raised that the stopping of dust in the development drives will only partially relieve the trouble on account of the dust which floats in the air for a long period after blasting. This, however, is only a small portion of the trouble, as I have found out after long experience that it is chiefly men who have worked rock drill machines at some time or other who are the victime, and I feel sure if the dust was stopped in the development faces alone there would be about ninety per cent. less cases of phthisis to deal with. The difficulty of the floating dust can also be considerably diminished, first by wetting all broken ore before it is shovelled with a few buckets of water, or a spray, which takes very little time if the water is close to hand, as in any decent system it should be. The walls of the stopes and drives in use could be hosed down occasionally, and all the adhering dust washed off and sent to the mill. Then in a few mines which have large ore reserves developed ahead of the mill requirements, it is possible to do all the work on one shift, and on any mines, except those which have only a limited number of working faces it is possible to work two consecutive shifts of eight hours each at the working face ; all blasting to be done on the second shift, and the miners to relieve each other at the working face. This will give the miners seven clear hours in which to get rid of gas and smoke, and to allow the dust to settle. That this scheme is perfectly practicable was demonstrated first by Mr. Andrew Robertson on the Wolhuter G.M. Co., Ltd., and a little later by myself at the Meyer and Charlton G.M. Co., Ltd., where the system was running when I left the property, and had been for at least eighteen months without any hitch, or increase in working costs whatever. The improvement in the atmosphere when the morning shift went on was remarkable. By blasting on one shift only a big saving in time was effected in the machine stopes, as instead of the miners having to take their machines down at the end of their shift, and remove them and the bars and hoses to a place of safety some distance away, they handed them over to their partners at the end of the first shift, already rigged up in position for them to continue work where they left off; a saving of some hours was effected by this, as apart from the time lost by removing the heavy machines from the stopes, and blasting, and then having to bring them back again and rig up on the second shift, the miner on either shift was sometimes delayed from entering the stopes by the fumes having failed to clear. The development was run on the same lines, but the miners were provided with three or four working faces, so that there was no loss of time, as when one face was drilled over they left it and started drilling in another. Care must be taken not to overdo the ventilation in any installation as it dries the fine particles too quickly and causes them to float in the air. The sinking of winzes should be encouraged as much as possible, and rises should only be put up short distances, as the putting up of long rises is most injurious to all connected with them, and should they be put up to any height the steady head tanks will have to be raised in the shafts. Too much blame has been laid on the miner for his neglect to use dust allaying devices; he and his indifference to anything beyond breaking rock are practically blamed for the bad conditions prevailing underground, in all public utterances, when in most cases the blame should be given elsewhere. Unless a good water system is installed the miner cannot be blamed for neglecting to use water. To carry water to his stope, or working face, from a distance, or to wait for the water to be delivered to him from some of the small mains in existence, which would possibly, if other stopes were drawing from them at the same time, deliver him about a bucket full of water in an hour, would take a lot of time, and he would not be encouraged to do so by his overseers, who are hustling to get the ore broken and sent to the surface as quickly as possible. The reason that the miners do not use the sprays and atomisers provided for their use by the mines is that they are of no practical utility, and are a hindrance to the work. They may allay the dust; but the miner becomes saturated with vapour, and finds the cure worse than the disease. In addition, now and then he loses a hole, and a drill, through the hole clogging and the drill fitchering. I feel sure that if an adequate water system was installed and maintained on the lines I have mentioned, that the miners would use it, and in any case they would then have no tangible excuse for neglecting to do so, and the system could be enforced without difficulty. When this system was in use on the Geduld Mine, the men were keen on it, and the miners were annoyed when the sampler came along and borrowed their hose to wash down the sides of the drives in order to see the reef more clearly. It is to the interest of no one that the present laxity in regard to supplying water is allowed to continue. The mines are losing their efficient white miners, and are not likely to replace them, as there is now a shortage of miners all over the world, and the reputation of the Rand is too bad to encourage more to come here. The high rate of wages paid to machine men is due to the above cause, and a further drain will now be made on the finances of the mines through having to contribute to the Government fund for miners' phthisis. The first person I know of to suggest using water under pressure at the working face was Mr. R. B. Greer. If the changes in the staffs on the Witwatersrand Mines had not been so frequent of late years, the solution of the dust problem would in all probability have been accomplished long ago.

---

*Paper read before the S.A.I. of E.

Rand Klip.

The report for the quarter ended 31st December, 1911, states that sinking was carried out continuously at the East Shaft, the footage being 281 ft. 6in., making the total depth at the 31st December, 1911, 1,347 ft. 6 in.—an improvement of 54 ft. 6 in. as compared with the previous quarter. The increase in the rate of sinking is due to the fact that ordinary Witwatersrand Quartzites are now being encountered. The hard sheet of diabase, mentioned in last quarterly report, was sunk through early in October as anticipated. During the quarter the space required for pumps (exclusive of sumps) has been cut out. There has been a shortage during the quarter varying from 10 per cent. to 15 per cent. of the ordinary requirements, and it has not been possible to further increase the footage with the amount of native labour available. The net expenditure for the quarter on shaft sinking, equipment and general charges amounted to £17,314 4s. 6d.

Ginsberg.

The results of the December quarter's operations on the Ginsberg Mine were of a satisfactory nature, the final profit amounting to £12,437. A greater tonnage was milled, and working costs were further reduced, with the result that the gross profit showed an increase of £920 as compared with that for the preceding quarter. The re-timbering of the Ginsberg shaft was completed during November, and mining operations in this section of the property has been resumed. The tube-mill has been erected, but it has not been run, owing to failure on the part of the Victoria Falls Company to supply the necessary electric power. However, it is expected that the difficulty will be overcome at an early date.

PROGRESS IN CYANIDATION OF GOLD AND SILVER ORES DURING 1911.

An Interesting Summary of Metallurgical Advance—New Mills and New Processes—South Africa Well to the Front.

[By Alfred James.]

The following extracts have been taken from Mr. Alfred James' contribution to the *Mining and Scientific Press Annual*:—

Introduction.

America still holds pride of place for advanced practice during the year, although the tendency has rather been to settle down and assimilate the great advances of the past year or two. One is inclined to regard the Santa Gertrudis mill as absolutely the best example of a silver-gold mill on up-to-date lines. In every way this mill is noteworthy, whether for the trouble taken in the preliminary investigation, the competitive nature of the practical tests, the expert talent assembled from all quarters, or the great success of its working. On the other hand, Africa is coming forward prominently, and there are signs of the more general adoption of methods of great success elsewhere. The new Brakpan plant, has signalised itself among recent African plants in being successful from the outset. The Brakpan is notable also as being the first example on the Rand of a mill on modern Mexican lines; thus agitation instead of being by pump transfer is by Pachuca tanks, and the gold in solution is recovered by filtration instead of by decantation, and precipitation is by Merrill zinc-dust process instead of by zinc shaving. The first dividend paid in South Africa from a modern mill—Pachuca tanks, Dorr thickeners, and filtration—seems to be that of the Lonely Reef in Rhodesia, to which credit is due for having at work the first plant of this type in that territory or on the Rand. A feature of Rand practice is the apparent difficulty of estimating the value of the gold in slime, pulp, and cyanide solution. That the difficulty does exist is shown by the discussions on the subject at the meetings of the Chemical, Metallurgical and Mining Society of South Africa, and the official report on the Adair-Usher and Butters results at the Crown Mines. At the same time, it seems almost inconceivable that groups of such great responsibility could be misled. Only a year or so ago the Adair-Usher results (readers will probably remember the criticism of the secretary of the company on the remarks in this review) were reported to show a saving of 5d. per ton over the decantation process. The chief mining group was publicly reported, without denial on its part, to have paid a large sum of money for the right to use the process. It now appears from the Crown Mines official report that the Adair-Usher residue was really 0·423 dwt. instead of 0·225 dwt., the apparent value when samples were taken in the usual way. A fuller account of this interesting report is given under filtration.

In another way Africa has also been prominent. Earlier in the year there were glowing reports on what the Giesecke mill was to do for the industry. Surprise at this was all the greater because it was evident to anyone of experience in ball-mill practice that the mill could not be the success claimed, because it has long been shown that for economical grinding in a tube-mill the elimination of the already slimed material is essential. The Giesecke mill combined a ball-mill with a tube-mill as one unit, the whole of the product of the ball-mill going without separation into the tube-mill portion of the appliance. It was therefore manifestly uneconomical. In addition, it has been common experience from the time of the original Globe, Lamberton, and other ball-mills that the wear and tear of iron or steel balls, when wet-crushing, was enormous, and there was no reason to anticipate any less wear and tear with the Giesecke mill. Indeed, the Krupp mill is the only one which appears to be able to stand the wear and tear of wet-crushing with iron or steel balls; and even in this mill the wear and tear is very much heavier than when dry-crushing. Last year in this review I ventured to predict, although the City Deep type of mill was then at the zenith of its fame, that a high proportion of the new South African mills would be designed for filtration instead of the hitherto impregnable decantation, and already this prediction seems to be completely fulfilled. It must be difficult to gauge the feelings of such pioneers as the Meyer and Charlton and New Goch, which after putting in the filters which enabled them to show recoveries of 94 per cent., relapsed to decantation—it has been stated for the sake of obtaining a mortar-box sample! India, too, is attacking other methods for the treatment of slime, and the erection of an up-to-date plant is anticipated at the Champion Reef mine; details are not available, but it is understood that the plans provide for Pachuca tanks and vacuum-filtration (Butters type). West Australia pursues its already evolved practice. Much metallurgical skill has been applied to discover a less unsuccessful system of treatment of the Gwalia Consolidated antimonial ore. On the other hand, H. T. Brett, late of West Australia (of Ivanhoe pan fine-grinding fame), seems to have no doubt as to the correct method of meeting successfully his similar problem at the Globe and Phœnix. Cornwall, curiously enough, is evolving practice which may later become a potent factor in gold ore treatment. Arthur Richards, who has made no little success of fine grinding of local tin residues with a consequent production of tin only surpassed by the largest mine or mines in the county, has set himself to increase the fine grinding standard from 200 mesh to 400 mesh, and is endeavouring to find some more suitable appliance than the tube-mill for this particular purpose. Again, Dolcoath has now an equipment of smooth running—giving almost the impression of velvet cushioned—pneumatic stamps which in American or African hands would probably easily beat the record for tonnage per head per diem. It is a matter for surprise that someone has not taken a battery of these and determined their output on, say, 3-mesh screening with quick drop and most suitable quantity of water, leaving the finer crushing to be accomplished in some secondary appliance such as the tube-mill.

Before proceeding further it is fitting to refer to the satisfactory (from the metallurgical point of view) termination of the East Rand fiasco. It started with a reported huge loss of gold in the cyanide plant altogether incredible to those knowing E. H. Johnson, the able chief metallurgist. As Mr. Johnson was referred to in this review last year as regaining the laurels for the Rand in the matter of crushing, the accusation or charge was all the more inconceivable to me, and it has given much relief and satisfaction to find that the official report of the committte not only entirely exonerates Mr. Johnson and states there has been no (such) loss of gold in the cyanide plant, but shows how the supposed loss has really been brought about as a result of over-calculation of ore content and tonnage by the mine officials. Mr. Johnson had my sympathy; I now add my congratulations.

(*To be continued.*)

---

[*] *Mining and Scientific Press*, January 7, 1911, pp. 52-56.

THE JANUARY OUTPUT: GROUP RETURNS.

Native Labour Shortage Still Affects the Output and Profits.

Rand Mines Group.

Results of crushing operations of Eckstein companies for the month of January were as follows:—

Company.	No of Stamps.	Tube Mills.	Tons crushed.	Estimated Working Costs per Ton	Total Fine Ozs.	Total Estimated Profit.
Modder "B" ..	80	5	31,100	18/10	12,341	£22,400
New Modder ...	180	7	52,580	17/ 3	19,248	34,781
City Deep	110	9	37,860	22/ 0	14,827	20,144
Village Deep ...	180	6	49,000	19/ 0	16,513	22,535
Village M. R. ...	220	6	31,120	21/10	16,273	33,737
Ferreira	80	3	21,000	18/ 3	7,668	12,241
Robinson	250	6	48,300	15/10	25,829	70,050
Bantjes Cons. ...	55	3	22,000	25/ 8	8,075	5,438
Totals & average	1155	45	292,960	19/ 3	120,774	£221,326

Reserve Gold.—Modder "B," 4,911 ozs.; New Modder, 10,629 ozs.; Village Deep, 6,200 ozs.; Village Main Reef, 2,384 ozs.; Ferreira, 1,970 ozs.; Robinson, 10,172 ozs.; Bantjes Consolidated, 660 ozs.; total, 36,926 ozs.

The Village Main Reef G.M. Co., Limited.—Decreased tonnage and consequent increased working costs and decreased profits, due entirely to shortage of native labour.

Results of crushing operations of subsidiary companies for the month of January were as follows:—

Company.	No. of Stamps Running.	Tube Mills.	Tons crushed.	Estimated Working Costs per Ton.	Total Fine Ozs.	Total Estimated Profit.
Rose Deep ...	300	7	64,100	17/10	21,575	£33,351
Geldenhuis Deep	420	7	57,290	25/ 0	21,210	17,000
Nourse Mines ...	260	7	51,800	22/ 8	18,414	18,172
Ferreira Deep ...	160	4	27,750	25/ 0	13,659	22,597
Crown Mines ...	620	26	148,300	19/ 1	60,213	110,015
Durban Rood. D.	100	3	22,685	24/ 1	7,747	4,987
Totals & average	1860	54	371,925	21/ 0	142,818	£206,122

Reserve Gold.—Rose Deep, 6,127 ozs.; Geldenhuis Deep, 410 ozs.; Nourse Mines, 347 ozs.; Crown Mines, 4,824 ozs.; total 11,708 ozs.

Ferreira Deep, Limited.—Owing to effects of stope cavings in November, previously reported, proving more serious than at first expected, and shortage of labour necessitating wholesale packing of broken ore in these stopes for safety: mill has been very short of rock, and costs are consequently high. Labour position now improved, but amount of ore available for mill during coming months will be dependent on quantity of packing required in bad stopes as well as on continued labour improvement.

Geldenhuis Deep, Limited.—High costs caused by decreased tonnage and changing over from North to East and West mills.

Durban Roodepoort Deep, Limited.—The wastage in labour was unusually severe, and was not replaced as rapidly as anticipated. Only 22,600 tons were crushed, as compared with a capacity of 25,000. Labourers are now coming in satisfactorily. The grade was slightly lower owing to a temporary fluctuation.

The Albu Group.

The following are details of the January operations of the producing mines of this Group:—

Company.	Stamps.	Tube Mills.	Tons Crushed.	Total Cost.
Aurora West	60	—	11,780	£11,110
Cinderella Consol	70	3	16,320	19,134
Meyer and Charlton ...	75	2	14,064	12,249
New Goch	120	4	30,362	24,458
Roodepoort United	50	3	28,113	25,751
Van Ryn	135	6	39,200	29,785
West Rand Consol	100	4	28,800	30,057
	610	22	168,639	£152,544

Company.	Cost per Ton.	Total Revenue.	Profit.
Aurora West	18/10.3	£14,140	£3,030
Cinderella Consolidated ...	23/ 5.3	21,762	2,628
Meyer and Charlton ...	17/ 5.0	27,240	14,991
New Goch	16/ 1.3	31,991	7,533
Roodepoort United ...	18/ 3.8	31,607	5,856
Van Ryn	15/ 2.3	54,972	25,187
West Rand Consolidated	20/10.4	33,629	3,572
		£215,341	£62,797

Barnato Group.

The following are the results of the January operations of the producing mines of the Barnato group:—

COMPANY.	STAMPS.	TONS.	REVENUE.	PROFIT.
Consolidated Langlaagte	140	21,638	£27,713	£8,117
Ginsberg G.M. Co. ...	80	12,410	19,062	5,790
Glencairn M.R.	160	18,861	16,052	2,906
New Primrose	160	22,700	33,081	17,015
New Rietfontein	120	17,149	21,610	4,256
New Unified M.R. ...	60	10,530	16,393	4,826
Quest G.M. & D. Co. ...	30	2,281	2,237	472
Witwatersrand	220	31,860	40,132	15,845
January totals ..	970	137,429	176,280	59,227
December totals ...	940	134,048	£171,242	£57,760

Neumann Group.

The following are particulars of the results achieved by the crushing companies in this group during last month, viz.:—

	TONS.	YIELD.	PROFIT.
Wit. Deep	38,220	£49,195	£12,412
Wolhuter	29,400	40,004	15,034
Main Reef West	13,674	22,983	7,580
Consolidated Main Reef ...	15,470	23,943	6,268
Knight Central	24,630	25,946	2,929
Treasury-cum-Jumpers ...	—	—	57
Total for Group			£44,280

Reserve Gold.—Wolhuter, 3,698 ozs.; Consolidated Main Reef, 352 ozs.

Knight Central.—The smaller tonnage for January was due to shortness of native labour, in addition to which the grade was slightly lower. The company's native labour supply is now improving.

Consolidated Gold Fields Group.

The following are particulars in regard to the outputs and profits for the month of January of the undermentioned companies of the Consolidated Gold Fields Group:—

Company.	No. of Stamps.	Tube Mills.	Tons Crushed.	Gold declared, Fine Ozs.	Total Profit.
Simmer and Jack ...	320	7	66,200	18,143	£37,646
Robinson Deep	200	5	46,800	18,299	35,584
Knights Deep	270	6	58,680	12,691	20,984
Simmer East	130	3	28,700	5,560	887
Simmer Deep	105	9	44,200	9,148	1,001
Jupiter	75	6	32,700	7,378	1,616
Luipaardsvlei	60	3	16,640	3,623	3,332
Sub Nigel	30	1	3,686	1,804	379
Totals	1190	40	297,606	76,646	£101,429

Reserve Gold.—Simmer and Jack, 1,255 ozs.; Robinson Deep, 3,946 ozs.; total, 5,201 ozs.

The "total profit" shown above includes sundry revenue, viz.: Simmer and Jack, £1,500; Robinson Deep, £564; Knights Deep, £563; Simmer East, £127; Simmer Deep, £763; Jupiter, £167; Luipaardsvlei, £870; Sub Nigel, £303; total, £4,857.

Luipaardsvlei.—Total profit also includes £1,724 net proceeds from 609 ozs. of gold from accumulated slimes.

Robinson Deep.—In addition to above 1,193 ozs. of gold were obtained from the old mill plates, the proceeds of which, viz., £5,000, have been placed to Renewals Fund.

Simmer Deep and Jupiter Joint Plant.—There is a shortage of gold for January as compared with gold called for, which it is expected will be recovered in February.

Sub Nigel.—Decreased profit is due to breakage in crankshaft of the main hauling engine necessitating stoppage of work.

Goerz Group.

Results of operations of the crushing mines of the Goerz group for the month of January were as follows:—

COMPANY.	STAMPS.	TUBES.	TONS.	VALUE	PROFIT.
May Consolidated ...	100	—	13,820	£17,468	£7,133
Princess Estate	50	4	14,083	17,010	—
Lancaster West	100	3	23,000	23,314	800
Geduld Proprietary	50	2	13,360	17,787	3,927
Totals	300	9	64,263	£75,579	£11,860

NOTE.—Princess Estate and Gold Mining Company, Ltd. Net loss £1,988. Absorption of gold practically at an end, and native labour position improving.

MINING MEN AND MATTERS.

Mr. U. P. Swinburne, Inspector of Mines for the Orange Free State and Cape Province, with headquarters at Bloemfontein, has left for the latter town.

* * * *

Among visitors to the Rand from the outside districts this week were Messrs. M. Stokes from Rhodesia, R. A. Rouillard from Natal, and G. A. Blenkinsop from Griqualand East.

* * * *

The Marquess of Winchester will return home during the first week in March, and Mr. Henry Birchenough and another director of the Chartered Company will follow his lordship for an extended stay in Rhodesia.

* * * *

Mr. F. Bronson, who for the past 18 months has been manager of the Midas Deep, was on Saturday last, on the occasion of his resigning his appointment, the recipient of a handsome presentation from his fellow-employees on the mine.

* * * *

Further South African capital is evidently forthcoming for Mexican mining enterprises. In the La Fé Mining Company, which has recently been reorganised, Messrs. A. Goerz and Company and Mr. Sidney H. Farrar are interested. The property is near Zacatecas, and covers 3,000 feet of the celebrated Cantera vein. The workings are 250 feet deep, and expose an ore-body 23 ft. wide and 650 ft. long, averaging 39s. per ton. The mine is still in the oxidized zone.

* * * *

The Association of Mine Managers of the Transvaal (incorporated) will hold its seventeenth annual general meeting of members in the Council Chamber, Chamber of Mines, Johannesburg, on Friday, 16th February, 1912, at 2.30 p.m. Business: (1) To read and confirm the minutes of the sixteenth annual general meeting held on the 17th February, 1911; (2) to receive and consider the report of the Council on the state of the Association, together with the annual statement of accounts; (3) to elect a president, vice-president, and eleven members of Council for the ensuing year.

* * * *

THE next monthly meeting of members of the Geological Society of South Africa will be held in the Council Chamber, Chamber of Mines, Johannesburg, on Monday evening, 12th February, at 8.15 p.m. The minutes of the ordinary monthly meeting held on the 20th November, 1911, will be read; and election of new members. The following papers will be open for discussion: "Xenoliths in Gabbro near Belfast, Transvaal," by Mr. J. P. Johnson; "The Intrusive Rocks of the Witwatersrand," by Mr. D. P. McDonald, M.A., B.Sc.; "The Normal Section of the Lower Witwatersrand System on the Central Rand, and its connection with the West Rand Sections," by Mr. E. T. Mellor, D.Sc. The following papers will be read:—"Note on the Occurrence and Origin of the Vredeehoek Tin Deposits, Capetown," by Mr. E. H. Nellmapius; "Iridosmene from the New Rietfontein Mines; its Analysis, Occurrence, and Genesis," by Mr. C. Baring Horwood, B.Sc., A.R.S.M., A.M.I.C.E.

* * * *

The monthly general meeting of the South African Institute of Engineers will be held this (Saturday) evening at 8 p.m., in the Council Chamber of the Transvaal Chamber of Mines. The chief business will be the presentation of Mr. T. P. E. Butt's reply to the discussion on his paper entitled "The Electrification of Randfontein Central." This reply will be of considerable length owing to the ground covered in the discussion, and should excite a large amount of interest, as Mr. Butt proposes to give a mass of further information. Those interested in the induction motor as used for mining purposes are especially invited to attend. On account of the length of Mr. Butt's reply, a paper by Mr. A. E. Blevins (of the *Transvaal Leader*) on "The Evolution of Printing and Typesetting Machines" will be held over until February 24, when it will be read at a special general meeting. This paper will be of interest, as it will be illustrated by some 150 excellent lantern slides showing details of printing machinery dating from the time of Gutenberg to that of the new press which is being installed by the Argus Company. All who are interested in the study of what is probably the most intricate machinery built, are cordially invited to attend the special meeting.

Rhodesian Section.

LATEST CHARTERLAND NEWS.

The Gold Fields-R.E.D. Amalgamation—Scope of the New Concern—The Geological Survey—Eileen Allanah—Planet Arcturus Developments—New Mashonaland Railways.

THE amalgamation of the Gold Fields Rhodesian Development Company and the Rhodesia Exploration and Development Company has evidently been somewhat rushed through, and the official information available in South Africa seemingly leaves one in the dark on many important points. Particularly does this appear to be the case with the Rhodesia Exploration and Development Company. According to a rough statement of the position of this concern, issued just recently, the R.E.D. has "large holdings" in more than 30 companies, and it is important that it should be known what these interests amount to. Yet no statement is given as to the number of shares held in the various concerns named. Neither has a statement been issued as to the shareholdings of the Gold Fields Rhodesian Development Company, Limited. It is stated that this Company has cash, loans and first class securities, amounting to £375,000, and "substantial shareholdings" in a number of important Rhodesian companies. In regard to land, claims, etc., a somewhat more explicit statement is made. *Inter alia*, the interesting announcement is made that arrangements have practically been completed for the flotation of the 470 claims on the Golden Kopje, Union Jack and Claymore blocks into a Proprietary Company, with a capital of £500,000, of which £150,000 will be working capital, and £51,432 will be held in reserve. The Gold Fields Rhodesian Development Company, Limited, will hold approximately a one-third interest in this Company.

According to a Rhodesian contemporary the Rhodesia Exploration and Development Company's statement of assets is certified by the auditors as having been "audited in a hurry." However an official statement has been made by the R.E.D. Company Directors, which is to the following effect:—

A new company to be formed to acquire all the assets of the Rhodesia Exploration and Development Company, Limited, and the Gold Fields Rhodesian Development Company, Limited, with a nominal capital of £3,000,000, of which £486,122 will be in reserve. The Rhodesia Exploration and Development Company, Limited, would receive 1,740,128 shares of the new company in exchange for 1,546,780 shares, which would represent to the shareholders of the Rhodesia Exploration and Development Company, Limited, the following: Each holder of 10 shares would receive $11\frac{1}{4}$ shares in the new company. Each holder of 50 shares would receive $56\frac{1}{4}$ shares in the new company. Each holder of 100 shares would receive $112\frac{1}{2}$ shares in the new company, and other amounts in similar proportion. Certificates for fractions of less than a share will be issued. This proposed distribution is calculated on the basis of nine Gold Fields Rhodesian Development Company's shares for four Rhodesia Exploration and Development Company's shares, as mentioned in the circular of December 14. To give effect to this, shareholders of the Rhodesia Exploration and Development Company, Limited, will receive the distribution mentioned above, while the shareholders of the Gold Fields Rhodesian Development Company, Limited, will be given one share in the new company for each two existing shares. The issued capital of the Gold Fields Rhodesian Development Company, Limited, is £1,547,500, so that they will receive 773,750 shares in the new company. Holders of option certificates giving the right to call shares of the Rhodesia Exploration and Development Company, Limited, at £2 10s. per share until June 30, 1912, will be given equivalent option certificates under which they will have the right to call an equal number of shares in the new company at £2 4s. 6d. per share.

* * * *

It is announced by the Director of the Geological Survery of Southern Rhodesia that it is the intention of the Government to publish a series of bulletins, which shall in general treat either of the geology and mineral deposits of a particular district, or of a particular class of mineral deposit, thus forming a series of reports, illustrated by geological maps and sections, which may be made to embrace a description of the proved and unproved mineral resources of the Territory. In addition, there will be the annual progress report presented to the Legislative Council. It is not intended to present progress reports at any shorter interval. This official statement will be received thoughout Southern Rhodesia with general satisfaction, as it has been universally felt that the good labours of Mr. Maufe, Director of the Survey, were rather neutralised by a policy of secrecy.

* * * *

It is understood that it has been decided to close down the milling plant of the Eileen Alannah Mining Company temporarily to allow of the installation of further machinery and of development work being pushed ahead. The consulting engineer (Mr. Walter Currie) recently cabled to the London office of the Company, as follows:—"Have commenced opening up No. 5 level. Main west drive extended 32 ft., average value of reef 25.2 dwts. over 72 ins. in width. Main east drive extended 37 ft., average value 16.6 dwts. over 76 ins."

* * * *

The following information regarding progress of development at the Planet-Arcturus Mines was recently cabled:—"Manager of mine reports:—Arcturus main shaft 349 ft. deep; hanging wall of reef just cut in the shaft showing visible gold, assays averaging 2 ozs. 10 dwts. 250 ft. level; total length, 579 ft. East drive, face continues in schist last 25 ft. $6\frac{3}{4}$ dwts. over 59 in. West drive, reef recovered at 280 ft. last assays 5 dwts. over 24 ins.; average total length, inclusive of low grade sections, $13\frac{1}{2}$ dwts. over 49 ins., excluding 107 ft. low grade ore, length 472 ft. 15 dwts. over 53 ins. Winze No. 1: depth 124 ft. 1 oz. 1 dwt. over 45 ins. Winze No. 2, 82 ft. last 20 ft. 1 oz. over 57 ins. total depth, 13 dwts. over 54 ins.; main shaft 370 ft. level will be reached this month, and cross-cuts and drives started. Slate:—Main shaft 405 ft. deep, 230 ft. level, length payable reef 425 ft. 15 dwts. exposed width 58 ins. 350 ft. level cross-cuts from main shaft just connected, driving on reef will be resumed immediately. Length, 165 ft., 1 oz. 4 dwts., exposed width, 50 ins.; parallel reef cut in main cross-cuts 41 ft. North of main reef.—Average width of reef is 16 in., assaying 1 oz. 10 dwts.; will begin to drive as soon as possible. Planet: main shaft, 250 ft. level, 94 ft. of reef are exposed; average width of reef is 26 ins., assaying $8\frac{1}{2}$ dwts. Shaft No. 4.—East drive fallen off in value, 50 ft. of reef are exposed; average width of reef is 25 ins., assaying 1 oz. 8 dwts. Winze west connected. Overhauling main shaft will be started as soon as possible. Approximate tonnage:—Slate, 15,000, 17 dwts.; Arcturus, 10,000, 13 dwts.; Planet, 7,500, 18 dwts."

* * * *

Interesting news is to hand regarding railway construction in Mashonaland. The Mazoe line is now open for traffic, but things are not yet running smoothly and the rains have caused constant delays and interruptions of traffic. The present terminus is, moreover, badly placed for serving the district as a whole, but it is favourably situated for extension to the Shamva, which is to be undertaken immediately. It is regarded as not unlikely that the Lomagundi line will shortly be extended as far as the Golden Kopje, and that concurrently with this the whole line will be converted into the standard gauge. The survey for the Victoria line is proceeding. The siding from near Gatooma to the Cam and Motor is under construction. It is expected that it will be finished by the end of March, and it is presumed that the erection of the plant on the mine will then be proceeded with.

Belgo-German Company.

The "Times" correspondent telegraphs from Brussels:—Under the name of Societe Commerciale Belge-Allemande au Congo a company was formed a few days ago in Brussels with the special object of entering into commercial operations of every kind in the Belgian Congo, under the auspices of the Outre-Mer Bank, the Compagnie du Congo pour le Commerce et l'Industrie, Baron Lambert de Rothschild, M. Franz Philippson, and a number of other personalities on the Belgian side, and the Deutsche Bank, the Deutsch Ostafrikanische Gesellschaft in Berlin, the firm Woerman in Hamburg, and the firm Karl Walther on the German side. The capital is 2,000,000f. (£80,000), and a first base of operation is anticipated to be furnished to the company in taking over the business of the firm Karl Walther in Matadi.

The accounts of the Charter Trust and Agency for the year ending November 30 show net profit for the year of £63,361. Adding thereto the balance of £11,740, brought forward from last year's accounts makes a total sum to be dealt with of £75,101. Interim dividends were paid for the half-year ending May 31, 1911, on the 5 per cent. cumulative preference stock, £11,770; on the ordinary stock at the rate of 7½ per cent. per annum, £8,828; on the ordinary shares (since converted into ordinary stock) at the rate of 7½ per cent. per annum, £2,942, leaving a balance of £51,560, which the directors now recommend be appropriated as follows:—To payment of dividends for the half-year ending November 30, 1911:—On the cumulative preference stock at the rate of 5 per cent. per annum, £11,770 16s. 8d.; on the ordinary stock at the rate of 7½ per cent. per annum, making 7½ per cent. for the year £17,656 5s.; to expenses of conversion and increase of capital, £2,621 4s. 5d.; to contingencies account, £10,000; to the managing director's additional remuneration, £1,841 9s. 11d.; and to carry forward £7,667.

The engagement is announced of Mr. G. B. Beak, late British Vice-Consul for the Katanga, to Signorina Adina Orsi, 8, Via San Frediano, Florence.

The Gem Market.

Mr. G. F. Kunz, reviewing the American gem market in 1911, writes in the *Engineering and Mining Journal*:—

The diamond, the pearl, the emerald and the sapphire are now enjoying public favour to the full. There has been a material advance in the price of these gems from the figures of four years ago, when I predicted that the sapphire in particular, which had not been the subject of fashion's favour, was soon likely to become so. The Fergus County, Mont., mines, were more productive than ever before; however, in general, the larger blue stones are included, coloured stones are not so well favoured as they were formerly. Cameos, which have not been in vogue for over 20 years, are being revived to some extent, although not enough to enable the dealers to sell out their old stocks. Coral is now in great favour. Many necklaces are imported at a wide range of prices, the cost varying from 5 cents to 2,000 dols. Pearls are higher in value, this being due both to the decreasing fisheries and to the universally accepted edict that the pearl is one of the richest and at the same time one of the most modest of jewels; therefore the price has steadily advanced since 1895, notwithstanding the depressions of 1907 and 1910. One of the principal discoveries of gems was that by Schaller of turquoise in minute triclinic crystals in Campbell County, Virginia. A series of combinations is now sold of vari-coloured square, round or oblong stones, or caliber cut stones, such as the emerald and the sapphire, demantoid, peridot, sapphire, kunzite, aquamarine, etc. In this way marked contrasts are produced, but the effect is often quite harmonious when a number of these stones are skillfully grouped together by the jeweller. Two-thirds of all fine jewels are now mounted in platinum. Whether it is due to this demand or not, platinum, which sold at 18 dols. per oz. in 1881, and at 24 dols. in 1891, brings in 1911 over 50 dols. per oz. when combined with 5 or 10 per cent. of iridium.

When communicating with advertisers kindly mention the *South African Mining Journal.*

Mining Concessions.

The Belgian Colonial Council has unanimously approved the two draft decrees approving the issue by a representative of the special Katanga Committee of fifty prospecting permits and amending certain provisions of the decree of 1910 relating to the recruitment of labour. These amendments will remedy abuses which have been disclosed in the practical working of the law. A new definition is given to the word "recruitment." The prospecting permits will be not transferable, and steps will be taken to prevent any illegal practices on the part of labour recruiters.

Cam and Motor.

The following cablegram has been received from the Cam and Motor property with regard to the Motor Mine:—"Developments continued very satisfactory. No. 4 level cross-cut 300 ft. north from 59 to 102 ft. Average 11 dwts. Total width good payable ore exposed 105 ft., face continues in ore good value."

It is said that the newly-appointed governor of the territories of the Nyassa Co., Dr. Matta e Dias, who for some time has held the position of deputy-governor, left Lisbon for Porto Amelia on the 10th inst., accompanied by a considerable number of civil and military officials, for the purpose of filling up vacancies in and supplementing the existing staff. Dr. Matta e Dias will proceed to the immediate carrying out of a policy of vigorous development, including the definite occupation of the vast and rich lands in the interior, particularly on the route of the proposed railway from Pemba Bay to Lake Nyassa. This railway is of international importance, as it will form the most direct and shortest route between British Nyasaland and the Indian Ocean.

Nkandhla Mines.

It is notified under the Natal Mines Act, 1899, that the following prospecting claims will be abandoned and open to be repegged on 23rd February, 1912, unless the exemption licences be renewed, and a fine at the rate of £1 per claim and other moneys due be paid by the said date; provided, however, that the fine shall not be payable if the licences be renewed, or notice of the abandonment of the claims by the claimholders be given within twenty-eight days after the expiry of the licences:—Registered claim No., 4,053; holder, Zululand Exploration Co., Ltd.,; claim, metal; Reserve No. 19, Mfungosi Valley, Nkandhla District.

ECONOMY IN FUEL.

Users of coal for domestic business or steam-raising purposes are now recognizing the saving of time and money effected by using only the best Transvaal coal and this coal is mined from the Vaalbank (Middelburg) Colliery.

This coal which can be obtained at about the same price as inferior coal, gives the highest heating value of any Transvaal coal, burns regularly and gives a minimum of ash or soot, and the fact that a trial order is always followed by repeat orders confirms the favourable opinions expressed by the present users of the coal.

Supplies of Vaalbank coal can be obtained from:—Johannesburg—A. E. Dunstone, Box 5034; The Holmes, Darcy Coal Agency Box 5176; Benoni—Lindsay & Pirie, Box 5; United & Holland, Box 316; Webb & Co., Box 370; Boksburg—J. D. Campbell, 105 Commissioner Street; Germiston—C. A. Margach, Box 223; Heidelberg—L. Lowenstein Box 175; Bloemhof—J. Leviton; Kimberley—A. G. Freeman Box 154; Pretoria—B. Butler & Co., Box 747; J. Franklin, Box 51; Middelburg—H. Baver & Co., Box 94; Lydenburg—M. McGee, Box 24; Pilgrim's Rest—J. H. Alcock Box 36; Barberton—D. Wasserberg & Co., Box 167; Delagoa Bay—I. Sangiorgio-Borruso Box 366; Pietersburg—B. Heiman, Box 36

Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

Circular vs. Rectangular Shafts.

A VIGOROUS STATEMENT OF THE CASE FOR THE RECTANGULAR SHAPE.

To the Editor, *South African Mining Journal.*

Dear Sir,—You published in your last issue of the *Journal* an article entitled "The shape of a Shaft," written by one E. Mackay Heriot, and taken over from the pages of the *Engineering and Mining Journal*, England, in which an attempt is made to sketch the advantages and disadvantages of the two types of shaft, circular and rectangular, for the purposes of metalliferous mining the summing up of the conclusions being greatly to the disadvantage of the latter type. It must not be forgotten the author is an English engineer writing to an English technical paper, and may therefore be excused if he is ignorant of the methods employed in modern rectangular shaft sinking operations. That he is unaware of them his article fully demonstrates. As there is in mining circles a considerable undercurrent of feeling on this question, and the experimental circular shaft sinking going on at present is being watched with great interest, a believer in the rectangular shaft may not let such an article pass unchallenged. It is the fashion to-day if one wishes to appear erudite to express measurements and weights in meters and K.g's, but the good old British foot and lbs. will be good enough for me.

Reasons governing the shape of a shaft.—If the ground to be sunk through is watery and consists of sands, gravels, clay and running shales, then it is obvious the circular shaft would recommend itself because of its adaptability to brick or concrete walling, forming horizontal arches on the circumference of the shaft, the strongest form of securing the sides of the shaft which could possibly be adopted. This brick or concrete walling also serves the purpose (up to a certain depth) of keeping the water back in place, thus avoiding the use of pumping machinery, and at the lower depths, of course, the circular shape would lend itself to the use of steel tubing, answering both these purposes again. A shaft lined with brick, concrete or steel is, of course, impervious to fire, another necessary condition for a colliery shaft. A circular shaft is admittedly a better ventilating medium than a rectangular, and in many collieries such a shaft is sunk for ventilating purposes only and used for no other. These are the only advantages possessed by a circular over a rectangular shaft, and in nearly all cases the conditions governing these advantages are found only in a colliery district. The ore miner generally finds his mineral veins laid in a stronger and harder country than coal, and as his conditions are different, so is the shape of his shafts different, because he lays out his work on lines which will give him the best efficiency at least cost, the experience of hundreds of years behind him, coming to his assistance in this matter. The advantage to him of a rectangular over the circular shape is this: Every square inch of area is available for use; he can sink much faster; he can sink much cheaper; he can hoist more ground (area for area); he uses timber as the dread of fire is with him a negligible factor. We will take these advantages *seriatim*, and endeavour to make a comparison.

Available Area.—The advantage on the side of the rectangular shaft is obvious and need not be discussed.

Speed of Sinking.—There is no circular shaft sunk on the Witwatersrand area with which a comparison may be drawn. Two were sunk before the war, one on the Langlaagte Royal, and one on the Primrose. Neither of these may be cited as a conspicuous success, and the rate of sinking was slow even for those days. One has been started on the Western Rand Estates, and work stopped on account of water troubles. The rate of sinking here was also very slow. One is in course of sinking at present on the New Modderfontein, and as far as one can gather the rate of sinking here is also abnormally slow as compared to say the average seven compartment rectangular shaft; the latter type sinking at a rate of 50 per cent to 100 per cent. more per month. This is a factor of great importance to be taken into account by the Mining Engineer when planning the type of shafts he requires for his work on these fields, especially if his ore bodies are lying at a depth of 3,000 ft. from the surface. It is most amusing to the miners of the Witwatersrand to read "expert" accounts of shaft work as conducted on the Continent and England. It gives one the impression of mining 20 to 50 years ago. We on the Rand are far in advance of any shaft sinking practices as are carried out over the water; that is judging from their published accounts of such work.

Mr. A. S. Redmayne's "Modern Practice in Mining," Vol. II. "The Sinking of Shafts" is a case in point. Thinking an authority such as Mr. Redmayne would give us something that would be useful to the shaft sinker in this country, I sent for the book, but it has been a great disappointment. Not much is said about rectangular shafts it is true, and what he says, and also what he quotes Mr. Coulson, the shaft sinking expert as saying, is so obviously incorrect as to be misleading. For instance "the difficulty and cost of squaring out corners" mentioned by your author as well as by Mr. Coulson. This one statement is sufficient proof in itself to an ore miner of the want of knowledge of these "experts" of rectangular shaft sinking practice. It costs no more in explosives or labour to "square" a corner down that it does for any other part of the shaft. Mr. Redmayne also gives in his books the illustration of a shaft sunk on a fault, endeavouring to show how costly and troublesome it is to secure such ground in a rectangular shaft as compared to a circular. We deal with these troubles daily on the Rand in shaft sinking and count them but little cost and worry, and it would give some of these oversea experts a nasty shock to their ideas if they would but come down with us and see such a trouble dealt with, and the sinking not impeded a foot. I have come to this conclusion, that if he is wise the coal miner will stick to his colliery practice; he is on fairly sure ground there; but when in his egotism he wanders away into the, to him, unknown paths of ore mining he is surely and certainly courting disaster.

Your author writes of shafts he has sunk in Spain. These are not shafts, they are only prospecting holes, and bear no comparison with our ideas of a shaft. I mention it to criticise somewhat his "supporting" methods. Masonry built up on stone arches thrown across the shaft from hitches cut in the rock! My dear Sir, cannot your mining expert see the absurdity of the whole thing? No Sir, your author is absolutely ignorant of rectangular shaft sinking and timbering methods. His own statements prove him to be so, and therefore his comparisons between circular and rectangular shafts are valueless.

Timbering.—Standard sizes on the Rand are mostly 9in. x 9in. wall plates and end pieces, 9in. x 7in. dividers, and 12in. x 4in. intermediate studdles, and 9in. x 9in. corner studdles. I am writing of seven compartment shafts. Centres vary according to local conditions or the desire of the engineer from 5ft. to 7ft. Six feet being, I suppose, about the average. Now the whole of this timber in a shaft sinking anything from 150ft. to 200ft. a month is handled and blocked by two men and six natives. The average time used in hanging, filling in and temporary blocking a sett from the time the wall plates leave the surface, until the men are up again with their stage planks and gear, being $1\frac{1}{4}$ to $1\frac{1}{2}$ hours. What have our Continental and English shaft experts to say to this? They will, of course say, and think, it is not true. They can't conceive it to be true. It passes their comprehension entirely, and yet it is a daily occurrence here and thought part of the day's work. German shaft difficulties are quoted. Eight years repairing one shaft, three years repairing another. Some of our Rand timberman would like a contract at the price. If this is as far as they have advanced in their shaft practice in the Old Countries the time is not far distant when men from our shafts here will be sent Home to show them how to do it.

In this country, as in most ore-mining countries, with our quartzites and shales, the rectangular shaft has not and cannot have any serious competition. It fills all our bill, sinks quicker and cheaper, gives us more available area, and adapts itself to the hoisting of far larger tonnages. Experimental work may from time to time be carried on with circular shafts, but I think the engineer has not arrived yet who would be brave enough to ask his people for the money to sink two circular shafts 3,000ft. for the purpose of equipping a new deep level proposition.—Yours faithfully,

M.H.C.

29th January, 1912.

Roberts Victor Diamonds, Ltd.

The washing results for the month of January from this Mine were 24,350 loads treated, yielding 7,678 carats of diamonds, an average of 31·5 carats per 100 loads.

Brakpan Mines.

The results of last month's crushing are:—Stamps working, 110; running time, 25 days; ore crushed, 41,060 tons; tube mills working, 6; ore hoisted, 46,764 tons; ore from dump, 1,364 tons; waste sorted, 13.13 per cent.; fine gold declared, 13,919 ozs.; value declared, £58,488; equal to 28s. 6d. per ton milled; working costs, £37,115; equal to 18s. 1d. per ton milled; working profit, £21,373; equal to 10s. 5d. per ton milled.

"Jumpers"-Treasury Results.

The following cable was despatched on February 7th to the London Agency of this Company giving particulars of the results of operation on joint working account for the month of January, 1912:—"The following is the result of the joint working of the Jumpers and Treasury Mines during last month: 90 stamps, working 27 days, crushed 9,800 tons, yielding 2,250 ozs. fine gold from mill; 1,102 ozs. fine gold from tailings by cyanide; 392 ozs. fine gold from current slimes; 115 ozs. fine gold from accumulated slimes; total from all sources, 3,859 ozs. fine gold; value of output, £16,210; joint profit for the month, £1,008. Position of joint gold reserve at end of last month, 567 ozs. fine gold."

Consolidated Langlaagte.

The gross profit earned by the Consolidated Langlaagte Gold Mining Company during the December quarter was £24,626; capital expenditure amounted to £226, and debenture interest to £1,500, leaving a net profit of £22,900. The amount expended on development and equipment of the deep level section was £77,877 7s. 8d. Ore of a slightly higher grade was milled during the quarter, and there was a further small improvement in the gross profit. There was a considerable addition to the quantity of accumulated slime treated, but the gold from the additional tonnage was not available at the end of December, and should be reflected in the returns for next quarter. The development footage at the deep level section amounted to 10,180 feet, of which 5,310 feet consisted of driving in reef. At December 31 the ore reserves at this section stood at 1,384,504 tons, which have been classified as follows: Payable, 930,512 tons of an average assay value of 8.77 dwt.; unpayable, 453,992 tons, of an average assay value of 2.43 dwt. The east shaft was sunk 266 feet to a total depth of 1,947 feet, and has reached a depth of 252 feet below the 6th level station. The west shaft was sunk 668 feet to a total depth of 2,179 feet, and has reached a depth of 246 feet below the 7th level station. The foundations for the new reduction plant are well advanced, and the work of erection will be put in hand at an early date.

MINING EXAMINATIONS.

Private individual tuition for Mine Managers', Mine Captains', Mine Surveyors', Mechanical Engineers' and Enginedrivers' Examinations, Practical Mathematics and Electrotechnics. Correspondence lessons where personal tuition is impossible.—E. J. MOYNIHAN, Consulting Engineer, 10, Anglo-Austrian Buildings, Box 2061, Johannesburg.

New Heriot.

This company's returns for last month's operations are as follows:—Ore milled, 10,410 tons; gold recovered, 5,234 ozs.; profit, £9,518; reserve gold at date, 1,022 ozs. The reduced profit is due to breakdown of the compressor. February results will also be affected slightly thereby.

New Primrose.

The directors of the New Primrose G.M. Co., report that during the December quarter 1,593 feet were driven, sunk and risen, exclusive of stopes; and 54,501 milling tons developed. Ore milled totalled 69,963 tons. The total yield was 22,396 ozs., or 6.495 dwts. per ton. Accumulated slimes treated yielded 1,086 ozs., an average of 2.309 dwts. per ton treated. Revenue from current gold totalled £95,132, or 27.598s. per ton; working costs amounted to £48,757, or 14.140s. per ton; and working profit to £46,375, or 13.449s. per ton. Accumulated slimes yielded £4,615, less £1,317 as cost of treatment; and sundry revenue added £1,381, making the gross profit £51,053. Capital expenditure absorbed £565, leaving a net profit of £50,488. The ore crushed for the quarter showed a decrease of 3,401 tons as compared with that for the period ended September 30. A further reduction in working costs was effected, however, and the total gross profit was reduced by only £1,329. A serious fall of rock occurred in the Moss Rose section of the mine on November 7, which caused a slight dislocation of work. Prospecting work in the older section of the mine continued to yield gratifying results. The development of the southern series had not been so satisfactory recently, though it is now certain that a considerable tonnage of low-grade ore will be won from this series.

The Arkansas Diamond Field.

By John H. Fuller.*

Five years have now elapsed since the finding of the first diamond on these fields. During this period one "pipe" has been proved to contain diamonds in payable quantity, the "washings" to date having shown 28 carats per 100 loads of 16 cubic feet. A second "pipe" has been proved to contain diamonds, but whether or not in payable quantities has yet to be determined, while a third "pipe" is still in the anticipatory state. The year 1911 saw but little development and practically no work on the mines, as all the companies in the field were hampered by lack of capital. The Arkansas Diamond Co., which owns the greater part of the "pipe" in sections 21 and 28—T. 98.—R. 25 W., is making quiet but determined efforts to raise the capital necessary to equip and develop its mine. It does not seem possible that a property of such great promise can remain unproductive for an indefinite time. The Mauney tract, and a portion of the Ozark company's holdings lie on this same "pipe." The most important event of the year was the finding of an $8\frac{1}{8}$-carat white stone on the Mauney tract. This is the largest stone found to date on these fields. A stone weighing 3 44-64 carats was also found on the "pipe" in section 14 owned by the American D.M. Co.; the stone is the largest yet found on its property. It is impossible to forecast the year 1912, as everything depends on what success the various companies may have in raising the required capital.

---

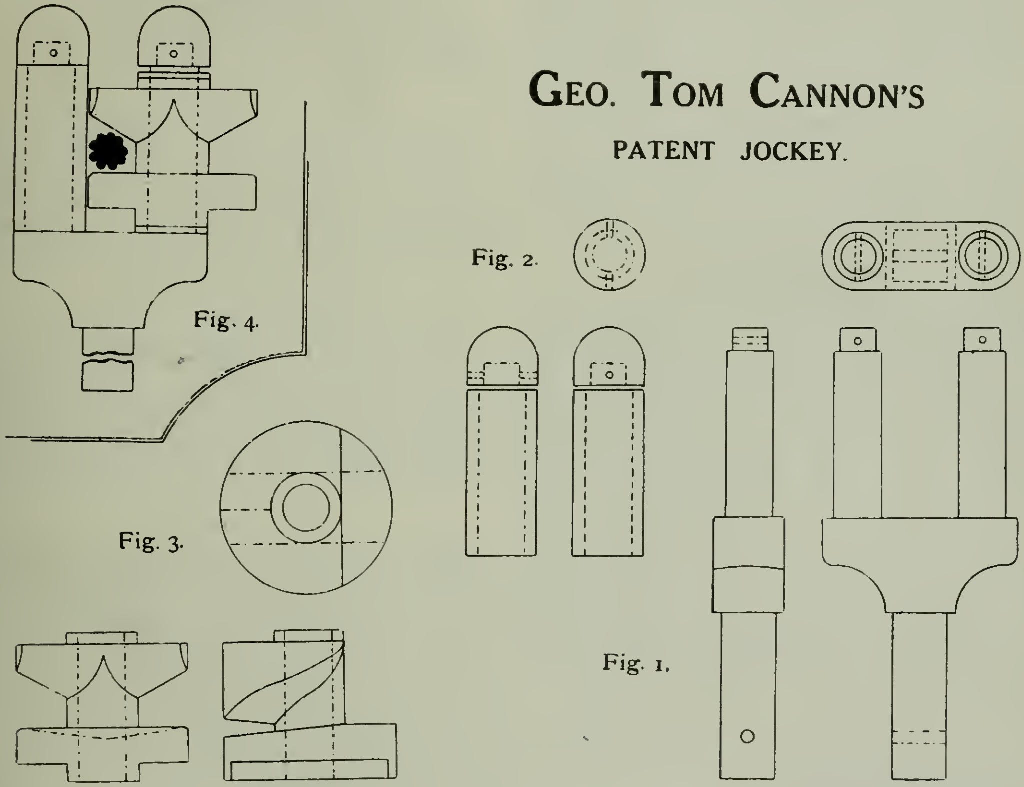
*From the *Engineering and Mining Journal*, New York.

ENGINEER With extensive experience in charge, and erection, of plants, is open to reappointment. Suction Gas, Steam, Electrical and general Engineering. Excellent Testimonials. V 45, Central News Agency.

ADVANTAGES OF THE NEW CANNON JOCKEY.

A Novel and Economic Labour Saving Device—On View at the Mining Exhibition.

With the endless rope haulage, it has always been the aim of the inventor to produce a device which will conform to certain mechanical laws for the purpose of obtaining the maximum of efficiency with the minimum expenditure of power, and labour. The majority of the present devices are constructed on an arm so as to grip the rope on the leverage principle, which not only creates unnecessary friction on the wheels of the trucks, and the rails, but has the further disadvantage of kinking the rope, cracking the strands, and requires a large amount of manual labour for hammering the rope in for the engagement, and hammering it out again for the disengagement.



GEO. TOM CANNON'S

PATENT JOCKEY.

Fig. 1.—Plan of Frame.
Fig. 2.—Rotatory Sleeve.

Fig. 3.—Rotatory Gripping Member.
Fig. 4.—Perspective of complete Jockey, showing rope in grip.

Mr. George Tom Cannon has now put a device on the market which he claims has overcome all the disabilities under which the present type of "jockey" labours, and a short description will be of interest to our numerous engineering readers. From the drawings reproduced in this article the general principle of the "Cannon" Jockey may be easily understood. Fig. 4 shows a perspective of the complete jockey with the rope in the actual position of grip, while fig. 3 shows the rotatory gripping member. The jockey is inserted in a bracket, which is bolted in such a position on the truck that the point of grip is at the dead centre, while the endless rope is so arranged at the point of engagement that it will fall between the rotatory sleeve and the pin of the rotatory member. Whatever may be the exact position of the latter at the point of engagement the friction of the rope will cause the member to rotate, thus allowing the rope firstly to drop into the opening, and secondly to grip between the rotating angle and the rotatory sleeve; in the event of the truck over-running the rope on a down grade, the rotatory member reverses its grip to the opposing rotatory angle. Here then is obtained a gentle grip which, in addition to saving the kinking and cracking of the strands of the rope, is automatic in its action, and thus saves labour at the point of contact, while its double rotatory angle obviates the possibility of trucks running away through either unintentional or accidental disengagement. In the event of a truck becoming derailed or overturned the pressure of the rope on the rotatory angle causes the gripping member to immediately come round to the releasing position, thus allowing the rope to leave the jockey. In the automatic release the rope is so arranged at the "knock off" that it is upwardly inclined, while the rails are downwardly inclined, the immediate result being that the pressure on the rotatory angle combined with the truck commencing to overrun the rope on the down grade causes the gripping member to turn into the release position and immediately to allow the truck to run free of the rope.

From the drawings of the device, which are here reproduced, it will be seen that the wearing parts, namely, the rotatory gripping member, and the rotatory sleeve, are detachable, and new ones can be easily inserted by unskilled labour, thus effecting a saving in the employment of skilled smithy hands such as are now necessary. The question of haulages with corners has received the special attention of the inventor, and he has registered a slightly modified pattern, which will obviate the necessity of the employment of labour at the corners, the jockey being so designed that it will negotiate turns automatically without the slightest attention at these points.

It may be of interest to our readers to know that a working model of this device will be shown by Autogrip, Limited, which company has obtained the exclusive rights of this patent, at the Mining Exhibition which opened yesterday under the auspices of the Chemical, Metallurgical and Mining Society of South Africa, at the South African School of Mines Building. Full particulars of this device may be obtained from the sole agents, Autogrip, Limited, 15 Bettelheim Buildings, corner of Simmonds and Fox Streets.

Kolmanskop Diamonds.

The output of diamonds from this Company's property at Luderitzbucht for the month of January was 11,608 carats.

Sheba and Rosetta.

The output from the Sheba Mine for the month of January amounted to 2,715 ozs. of fine gold, being an increase of 9 ozs. over that for December, and the output from the Rosetta Mine totalled 432 ozs. of fine gold, being an increase of 26 ozs.

Worcester G.M.

The Worcester Exploration and Gold Mining Co. report for January gives the following particulars:—Crushing done, 4,200 tons during 22·13 days; yield from mill, 884·471 ozs.; yield from cyanide, 345·447 ozs.; total yield, 1,229·918 ozs., valued at £5,196 8s. 1d.; approximate profit, £1,850.

Van Ryn Deep.

The directors of the Van Ryn Deep report that during the December quarter the east incline shaft was sunk 429 feet. The Main Reef was picked up on the south side of the downthrow dyke at about 1,620 feet. The shaft was continued in reef, and the 280 feet sampled averaged 8.48 dwts. over 29.2 inches. A station and bin were cut at the 1,600 feet level, and drives started east and west. The west incline shaft was sunk 13 feet. A pump station and sump were cut at the fourth level, and a three-throw electric pump was installed. The main bin between the west incline and the vertical shaft was holed, and is now being enlarged. The total footage driven, risen and sunk (exclusive of shaft sinking) amounted to 3,425 feet. The ore reserves were increased by 98,411 payable milling tons of an average value of 7.83 dwts., and 47,970 tons of unpayable ore of an average value of 3.27 dwts. At the end of the quarter there were developed 603,716 milling tons of payable ore of an average value of 7.17 dwts., and 223,618 tons of unpayable ore of an average value of 2.72 dwts. By resolution of shareholders in December, 1911, the issued capital of £1,496,114 was reduced to £598,446 by the issue of two new shares of £1 each for every five shares of £1 each in the old capital, and the capital again increased by the creation of 598,446 £1 shares to £1,196,892, such new shares being offered to shareholders at 21s. per share until January 18, 1912, and guaranteed at that price subject to a commission of 1s. per share. The holders of the option on 126,943 reserve shares in the old capital having abandoned their option, the whole of the reserve shares were cancelled under the reconstruction scheme.

CYANIDE of SODIUM, 120 %
ZINC DUST, SHEETS and SHAVINGS.
MABOR FUSION CUPELS and MATERIAL.
3 STAR CRUCIBLES and CRUCIBLE BARS.
3 STAR LITHARGE.
HARDWOOD MINING POLES and SAWING TIMBER.
"BRUNSVIGA" Calculating Machines.

RICHARD HEYMANN & CO.,
73/8 Exploration Buildings.
P.O. Box 3425.
Telephone 351.
Telegrams: "Extra."

Blaauwbosch Diamonds.

The washing returns for January, 1912, are as follows: 5,870 loads washed; 2,139⅝ carats; or 36.45 carats per 100 loads.

Glynn's Lydenburg.

The Manager has wired as follows:—Output for January, 1912:—Tons crushed, 3,141; yielding, 1,761 ozs. fine gold; valued at £7,320; estimated profit for month, £4,145.

Cons. Co., Bultfontein Mine.

The Directors' Report for the year ended 31st December, 1911, states that the Company has, in accordance with the Working Agreement, dated 22nd October, 1889, received from De Beers Consolidated Mines, Limited, the half-yearly payments of interest at the rate of 7½ per cent. per annum on the Company's capital, amounting to £54,112 10s., and a similar amount has been distributed to the shareholders.

Diamonds in Rhodesia.

The Standard Bank in Bulawayo has just received from Mr. Harry Lloyd, of Somabula, a diamond, weighing 32 carats. The stone has a greenish tint. Mr. Lloyd is, with another worker, carrying on mining operations for precious stones on the Somabula fields, belonging to the South African Options Syndicate, from which they have leased ground on tribute. Hitherto their finds of precious stones have, so we are informed, "realised sufficient to pay wages."

Witwatersrand.

Number of feet driven, sunk and risen, 3,129½; ore developed, 87,359 milling tons; crushed, 103,725 tons; total gold recovered, 28,380.793 ozs.; revenue from gold, £120,554; working costs per ton milled, 15,327s.; total working costs, £79,488; working profit per ton milled, 7.918s.; working profit for quarter, £41,066; sundry revenue, £5,455; gross profit for quarter, £46,511; capital expenditure, £1,069; net profit, £45,412. The amount expended on the development and equipment of the southern section was £29,551 14s. 3d. There has been a considerable improvement in the grade of the ore sent to the mill, and though working costs were higher, the total gross profit shows an increase of £12,110 as compared with that for the previous quarter. The higher working costs were due partly to the increased amount of waste sorted out, and partly to the smaller tonnage crushed. The amount of rock sent to the mill fell away considerably in December, owing to a reduction in the native labour complement. It is hoped to effect an improvement in the supply at an early date. The vertical shaft was sunk 296 feet to a total depth of 944 feet. The change over from the temporary to the permanent steel headgear was accomplished during November, and this caused a temporary stoppage to sinking. The northern incline shaft was sunk 139 feet, and has reached a total depth of 772 feet. The shaft has reached a distance of 203 feet below the 13th level station. Active development operations are being carried on at the 13th level in this shaft, and reef of promising value has been exposed. Greater attention has also been paid to development in other sections of the mine, and the results obtained have been of a satisfactory nature.

E. J. MOYNIHAN,
CONSULTING ENGINEER.
PLANS, SPECIFICATIONS, REPORTS AND ADVICE, MINING EQUIPMENT, STRUCTURAL WORK AND FINANCIAL ADVICE.
10, ANGLO-AUSTRIAN BUILDINGS. Box 2061.

THE WEEK IN THE SHAREMARKET.

A Good Beginning—Improvement Not Maintained—Ending Dull.

The market passed through three brief phases this week. It began unexpectedly well, went easier and finished dull. The reasons given for the improvement were sound enough—brighter labour supply, end of water scarcity, and better political outlook. These things, however, were not sufficient to maintain any buoyancy, and prices fell away as the week progressed. The January returns from the mines do not, of course, reflect the increasing labour supply, and not till March will the effect of this factor be seen. The closing down of the Randfontein Deep following that of the Rand Collieries cannot be regarded as favourable, though both are but temporary expedients. The course of prices in the week may be seen from the following table:—

	Friday, 2nd.	Sat., 3rd.	Monday, 5th.	Tuesday, 6th.	Wed., 7th.	Thurs. 8th.
African Farms ...	16 9B	16 9B	16 9B	16 9B	16 9	16 3B
Aurora West ...	...	...	7 6B	7 6S	7 6B	7 6B
Adair-Usher Process	1 9B	1 9B	..	1 9B	...	...
Apex Mines ...	33 6B	33 6B	34 3B	35 6B	36 3	33 6B
Bantjes Consolidated	25 0	25 0	25 3	24 9B	24 6B	24 3B
Benonis	10 6B	10 6B	9 0	10 0	9 6B	9 0B
Blaauwbosch ...	14 0B	14 0B	...	...	...	14 0B
Bushveld Tins ...	0 6B	0 6B	0 9S	0 9S	..	0 6
Brakpan Mines ...	52 0	52 0	53 6B	54 0	52 0B	52 0B
British S.A. ...	...	...	...	30 0S	...	...
City and Suburban ...	47 9B	47 9B	49 3	49 6B	49 0B	48 6
City Deeps	51 3B	51 3B	51 6B	51 6B	51 0B	50 6
Cloverfield Mines ...	4 1	4 1B	4 2B	4 8	4 6	4 3B
Cons. Langlaagtes ...	19 0	19 0B	19 3B	19 0B	19 3B	19 3
Cons. Main Reefs ...	18 6	18 6	18 0	19 0	18 6B	17 9
Crown Mines ...	126 6B	126 6B	...	...	...	...
Clydesdales	..	...	11 0B	11 0B	...	...
Coronation Freeholds	0 7B	0 7B	0 7B	0 7B	0 7B	0 6B
Concrete Cons. ...	...	...	...	7 9B	15 0S	7 6B
Con. Investment ..	...	...	21 6B	21 0B	...	...
East Rand Cent. ...	7 9B	7 9B	7 9B	8 0B	8 0B	8 0B
East Rand Coals ...	2 5B	2 5B	2 5B	2 5B	2 6B	...
East Rand Deeps ...	.	...	...	1 9B	..	...
East Rand Props. ..	65 0B	65 0B	64 0B	65 0	62 0S	60 0B
East Rand Deb. ...	£97	£97	...	..	...	...
Eastern Gold Mines	...	..	2 0	...	1 9	1 9B
Govt. Areas... ...	22 9	22 9	22 9	22 9B	22 3	22 0
Glencoe (Natal) Colls.	...	...	...	5 9B	...	...
Glynn's Lydenburgs	...	...	..	33 0	..	32 6B
Glencairns	...	...	..	4 0B	5 0	...
Jumpers	16 0S	16 0S	16 0S	16 0S	16 0S	12 0B
Jupiters	8 6B	8 6B	10 9	11 0B	10 0	...
Kaalfontein Diamonds	0 6B	0 6B	0 6B	0 8	..	0 7
Klerksdorp Props. ...	3 4B	3 4B	3 3B	3 3B	3 2B	3 0B
Knight Centrals ...	15 0B	15 0B	16 0	16 3	15 9	14 6
Lace Props.	2 10B	2 10B	...	..	...	3 6S
Lydenburg Gold Farm	8 3B	8 3B	8 3B	8 3B	8 3B	8 4
Main Reef Wests ...	29 3	29 3	29 6	30 3B	29 6	28 6B
Modder B's	54 0	54 0	54 3B	55 0S	54 6B	54 6S
Midas Deeps ...	1 3B	1 3B	1 3B	1 5S	...	1 4
Middelvlei Estates...	1 9B	1 9B	1 9B	...	1 9B	2 0B
New Eras	6 0B	6 0B	6 3B	6 3	6 3	6 0B
New Kleinfonteins ..	29 3B	29 3B	29 6B	29 6	29 3	29 0
New Rietfonteins ...	11 6	11 6	11 9B	11 9	11 6	11 0B
New Heriots ..	95 0S	95 0S	95 0S	95 0S	94 0S	94 0S
New Unifieds ...	19 0S	19 0S	19 0S	18 3B	...	19 0S
New Boksburgs ...	1 0B	1 0B	...	...	1 6	1 3B
Orange Diamonds ..	1 11	1 11	1 11	1 10	1 9B	1 9B
Pretoria Cement Co.	54 0	54 0	53 0B	52 9B	...	52 6
Premiers Preferred .	170 0B	170 0B	...	...	...	...
Rand Nucleus ...	...	...	2 10B	3 0S	2 9B	2 9B
Randfontein Estates	33 6	..	34 6	35 0	34 3B	33 6B
Rooiberg Minerals .	26 0	26 0	26 6B	27 3B	27 3B	26 0S
Rand Klip	4 0B	4 0B	4 0	4 2S	3 9B	4 3S
Roberts Victora ...	...	...	...	20 6S	...	...
Rood. U.M.R. ...	20 0B	20 0B	21 0S	...	...	...
Rood. Durban Deeps	27 0B	27 0B	28 0	..	29 0S	25 0B
Randfontein Deeps ..	...	...	3 0B	3 3B	3 0B	..
Ryan Nigels ..	...	...	4 0B	4 0B	4 0B	4 0B
Rand Collieries ..	...	...	5 0B	...	5 0B	5 6B
Simmer Deeps ...	..	...	4 0B	4 6B	...	...
South African Lands	4 1B	4 1B	4 6	4 6	4 4B	4 3B
S. Randfontein Deeps	2 6B	2 6B	...	2 9	2 6B	...
Sub Nigels	6 0B	6 0B	6 9	6 6B	...	...
S. A. Breweries ...	40 0S	40 0S	38 6B	39 0B	39 0B	39 0B
Springs Mines ...	8 0B	8 0B	8 9B	9 0B	9 0	...
Swaziland Tins	35 0B	35 0B	40 0	40 0	40 0B	40 0B
Trans. G.M. Estates	46 3B	46 3B	46 0B	47 9B	47 9S	47 0B
Temple Tins ...	2 9B	2 9B	...	...	..	...
Trans. Coal Trusts..	34 6B	34 6B	35 9S	36 0	35 6B	35 3
Van Ryn Deeps ...	8 0	8 0	8 0B	8 0B	7 10B	7 11
Village Deeps ...	42 0B	42 0B	43 0B	43 0S	42 0S	...
Vogel. Cons. Deeps...	1 7	1 7	1 3B	1 7B	1 9B	1 7B
Voorspoed Diamonds	...	...	...	...	16 6B	16 6B
Witbank Collieries...	42 0B	42 0B	43 0S	43 0	40 0B	42 0S
Wolhuters	23 0B	23 0B	23 0	23 0B	23 3	23 3B
Wit. Deeps	53 0B	53 0B	53 0	52 0B	46 0	46 0B
West Rand Con. ...	10 0B	10 0B	10 0B	...	...	...
Zaaiplaats	70 0B	70 0B	70 0B	70 0B	70 0B	70 0

B Buyers. S Sellers.

INVESTORS' DIARY.

The following company meetings have been announced:—

Feb. 20.—Premier (Transvaal) Diamond Mining Co.
Feb. 28.—East Rand Prop. Mines.
Feb. 29.—Worcester Exploration Co. (Worcester C.P.).
March 6.—Crown Mines.
March 7.—Rose Deep.
March 8.—National Bank (Pretoria); Geldenhuis Deep; Wit Deep; Cloverfield Mines.
March 12.—Durban Rood. Deep.
March 13.—Robinson G.M.
March 14.—Bantjes Con. Mines.
March 15.—Village Deep
March 20.—City Deep; Lancaster West; May Consolidated; Anglo-French Coal Estates.
March 21.—Ferreira G.M.
March 22.—Modder "B"; Vogel Cons. Deep; Knight Central.
March 26.—Cassel Coal Co.
March 27.—Rand Mines; Modder Deep Levels; Princess Estate; Geduld Prop.
March 29.—Simmer Deep; Jupiter.
April 12.—Transvaal Consolidated Lands.
April 25.—Wit. Deep; Knight Central; Wolhuter; Treasury; Consolidated Main Reef; Main Reef West; Witbank Colliery; Vogelstruis Consolidated Deep; Cloverfield (Extraordinary General Meetings).
April 30.—New Era; Springs Mines; Brakpan Mines. Transvaal Coal Trust.
May 17.—Wit. Deep; Knight Central; Wolhuter; Treasury; Consolidated Main Reef; Main Reef West; Witbank Colliery; Vogelstruis Consolidated Deep (Extraordinary General Meetings).
May 22.—Apex Mines; New Kleinfontein.
May 23.—Benoni Consolidated.

No Income Tax.

Last year Mr. Hull stated, in his Budget speech, that in all probability the shortfall in revenue resulting from the annual curtailment of the railway surplus would be made good by an income tax, and it was pretty plainly hinted that such a tax would be imposed during the forthcoming session. The finances of the Union, however, says the *Cape Times*, are in such a flourishing condition for the time being that, we have excellent reason to believe, the idea of introducing an Income Tax Act this year has been abandoned. It is not considered probable that any additional taxation of any kind will be imposed, unless, indeed, the Native Squatters' Bill, in its present form, should become law.

BULLIVANTS'
STEEL WIRE
MINING ROPES

WIRE ROPES
FOR
HAULING, WINDING
AND ALL MINING OPERATIONS.
BLOCKS, PULLEYS,
& ALL APPLIANCES FOR WORKING
WIRE ROPES.

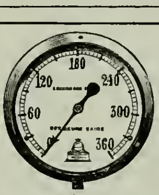
BULLIVANTS' SOUTH AFRICAN Co. Ltd.
F. W. DUQUEMIN, Manager.
Trust Buildings, Fox St. P.O. Box 4846 Johannesburg.
Rhodesia { Sessel & Rose P.O. Box 308 Bulawayo.
" " P.O. Box 266 Salisbury.

WANTED.

First-class man to take charge of Cyanide and Assay work for five-stamps proposition up-country. Starting salary £30 per month. Apply with copies of testimonials to CYANIDE c/o South African Mining Journal, P.O. Box 963, Johannesburg.

Telephone 217. Box 2127.

GEORGE McINNES, B.Sc.,
Importer of Electrical Supplies for the Trade.
Sole Agent for the "ARCONA" Metal Filament Lamp.
MARSHALL SQUARE, JOHANNESBURG.
ESTABLISHED 1892.



ON ADMIRALTY LIST.
IMPROVED BOURDON GAUGES.
BUCHANAN PATENT COUNTERS.
IMPROVED ENGINE INDICATORS.
HANNAN & BUCHANAN,
75, Robertson Street, GLASGOW, Scot.

THE STOBIE PATENT RESPIRATOR

Only weighs half an ounce. Cheapest, most effective and comfortable in the market.

Order wholesale from Stobie Company (Ltd.), Box 2321, Johannesburg, or retail locally through your chemist.

Miners' Phthisis prevented by the use of Stobie Respirator.

PRACTICAL DEMONSTRATION
OF THE WORKING OF
"SISKOL" HAMMER-
STOPE- Drills

Will be given at the Mining Exhibition
now in progress at
The S.A. School of Mines, Eloff Street.

International Channelling Machines, Ltd.,
(INCORPORATED IN ENGLAND)
2 & 3, TRUST BUILDINGS, JOHANNESBURG.
Phone 2643. Telegrams "SISKOL." P.O. Box 1382.

Engineering Notes and News.

Worn Shoes and Dies for Ore Bins.

A very serviceable use for old shoes and dies has been found at the Western shaft of the Main Reef West Company. These discarded items of the battery are being employed for the purpose of minimising wear and tear on the woodwork in the ore bins at the new shaft. The shoes and dies are bolted down to the main floor of the bin over which the ore slides. The fine and wet material quickly forms a rough cement between the dies, and subsequent tippings of ore run over this floor, which ably protects the main timber structure of the bins.

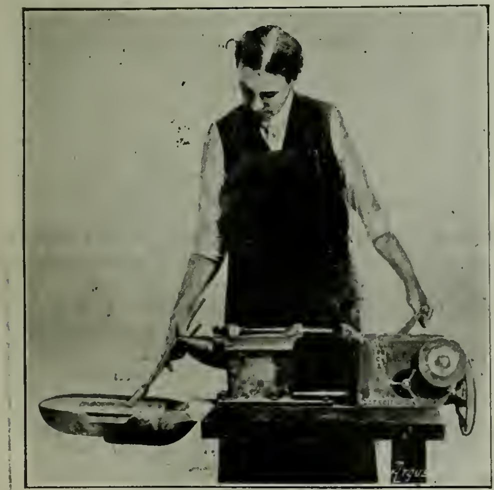
New Rotary Machine.

During the week a demonstration of the merits of a new design of rotary diamond washing machine was given in a yard at the back of Lace Buildings, Fox Street. The inventor, Mr. T. H. Bradbury, who has had considerable experience of the mechanical requirements of the diamond digger has designed the machine with the object of meeting most of them in a convenient and reasonably cheap way. The rotary is light, compact and of durable quality, made entirely of iron, and weighing only about 450 lbs. Various improvements calculated to improve the concentrating efficiency and reduce the manual labour usually required have been effected, and the whole cost of the outfit is £30. A sieving attachment, if desired, is added at the cost of a further £10. The plant is manufactured by Messrs. Batten & Edgar, Anderson Street, Johannesburg, and is well worth inspection by those who are interested or likely to become interested in diamond operations.

Electrical Banks in Germany.

A period of slightly over three years has elapsed since the formation of the Elektro Treuhand Gesellschaft as the financial organisation of the A.E.G. and the Siemens-Schuckert Works, for the purpose of financing large transactions and facilitating the establishment of supply works and tramways. The beginning of activity was, however, postponed to a later period, partly because the time was not favourable for large operations and partly because the founders themselves had ample funds at their own disposal. The share capital of the bank was to be £1,500,000, and bonds of three times this amount were also to be issued. It is now announced that the first transaction to be proceeded with will be in connection with the Hamburg Elevated Railway. It is understood that the bank will take over shares of £750,000 in the railway, and issue bonds of its own of a similar amount, the bonds having an additional guarantee based upon the working lease to be taken over by the manufacturing companies. Shortly after the constitution of this particular bank the Felten and Guilleaume Co. followed the example by forming a similar organisation. The later, however, has not hitherto done any business, and the slight distribution of profits so far made has been derived from interest receipts. On the other hand, the financing company of the Bergmann Electricity Works—the Bergmann Electricity Enterprises Co.—was brought into existence at a later date, and has recently issued its first annual report. This shows a loss of £15,000 for 1910-11 on a paid up capital of £150,000 out of nominal capital of £600,000. It will, however, be necessary to call up further capital this year in connection with the construction of authorised electric railways in Upper Bavaria.

A COMBINATION TOOL FOR PROSPECTORS AND FARMERS.



It is rarely that one comes across a tool which has not only been specially designed to meet the requirements of prospectors, farmers and others in out-of-the-way parts of the country, but has met them with such distinct success as in the case of "The Detroit" combination tool, which is represented in the accompanying illustration. One of the prime disadvantages of living in a sparsely populated country "of magnificent distances" such as South Africa is the constant need of "repairs" to machinery, implements, and articles of various kinds which require the services and more particularly the tools of the blacksmith or fitter. Most prospectors of experience and the average farmer of intelligence is capable of performing common repairing work, but not every one finds himself able to possess or carry about a forge, an anvil, an emery wheel, pipe vice, drill press, and the rest of the cumbersome and generally expensive apparatus without which no workshop can be said to be properly provided. Messrs Moorhouse, Ltd., of Bree and Fraser Streets, have imported what is neither more nor less than a portable workshop, amply equipped in this respect, the special merit of which is not that it contains these tools and apparatus, but that it carries them in small, though sufficiently convenient compass, within the limits of a moderate weight, and last, but not least, within the reach of a modest purse. The illustration gives some idea of the compactness and practical usefulness of the invention, but only a personal inspection of it can enable one to realise that it is all that it claims to be, viz., "a boon to farmers, prospectors, etc., etc., and, in fact, to everyone requiring a tool shop in a hurry for emergency repair work." Its weight is only 200 lbs., and its size can be learnt from the illustration. Messrs. Moorhouse, Ltd., invite inspection, and, having seen the tool ourselves, we can confidently recommend people who have periodical repairs to do to accept the invitation without delay.

A Power Plant for the Premier.

As the Tweefontein Power Scheme does not appear to be making progress, and the possibility of the Premier Mine getting cheap power by purchase seems remote, the directors have been considering the advisability of installing their own turbine plant. With the success of the New Kleinfontein station as an example, they can hardly make a mistake in adopting a power scheme provided the best advice is first obtained.

Gas and Oil Engines.

The chief inspector of machinery of New Zealand, in his annual report for 1910-11, mentions that the gas and oil engines and gas producer engine seem to be displacing the steam engine, except where steam is required for manufacturing purposes. Most of these engines are imported, and are sold at prices against which it would be almost impossible for New Zealand firms to compete. It is stated that the oil engine is rapidly gaining in popularity in rural and remote districts, superseding the steam engine wherever the work is of an intermittent nature and scattered over a wide area.

Electricity in Mining.

There is a distinct branch of electrical engineering in connection with the equipment of mines. The conditions in mines are very different from those on the surface. Not only is it more difficult to install and properly maintain electrical equipment underground, but, unless suitable precautions are observed, the presence of such equipment in mines adds danger to a calling already hazardous. The electrical section of the United States Bureau of Mines is particularly concerned with the problem of safeguarding life and property from the dangers which attend the use of electricity underground. The following extracts discuss some of the features of the problem, outline the purpose and scope of the investigations of this section of the bureau, and describe the work that it has undertaken. The bureau appreciates that the suggestions of the inspection departments of the various States and the co-operation of all those who use or manufacture electrical mining equipment will be invaluable in attacking this problem, and is issuing a bulletin to call attention to the work and to invite suggestions with regard to it. Correspondence should be addressed to the Director of the Bureau of Mines, Washington, D.C.

Underground Electrical Equipment.—Electricity is used underground in mines for haulage, lighting, driving pumps, fans, drills, coal-cutting machines, and hoists, for detonating explosives, and for signaling. Both direct current and alternating current are used, the former much more extensively than the latter. Direct current is distributed at potentials up to 600 volts wherever power is used. Alternating current is distributed at over 2,000 volts and is usually carried only a short distance underground to serve high-voltage motors or transformers operating motor-generator sets or rotary converters. Electric haulage is operated principally from trolley wires at 250 or 500 volts. The trolley wire is necessarily bare, and in low coal is dangerously near the heads of persons in the same entry with it. Lighting circuits are often connected between the trolley wire and earth, with the lamps in series. Stationary motors are often connected between the trolley wire and earth. Machine wires are frequently bare up to the point of connection with the trailing cables. Explosives are detonated from batteries (storage or primary), from magneto generators (frequently referred to as batteries), from power circuits, and from separate generators used only for detonating. Signals, which include lights, bells, and telephones, are operated principally from primary batteries.

Conditions Surrounding Equipment.—Underground equipment is exposed to falls of roof, coal and rock, that are sufficient to wreck installations of the best character. The acid waters and the dampness in mines make the insulation problem difficult. The fact that the need of electric service at many points underground is only temporary limits economical investment in equipment. The problem of safeguarding life is rendered still more difficult by the fact that many of the underground workers do not appreciate the dangerous character of electricity and ignore the rules made for their protection. The temptation to install electrical equipment in coal mines in a temporary and improper manner is increased by the fact that coal, especially dry coal, is not a good conductor of electricity, and wires may sometimes come in contact with the coal without trouble resulting. A machine wire supported upon wooden pegs driven into the coal may never give trouble; and it would be hard to convince a man whose only experience had been with such installations that to thus support a wire is not good practice. In this connection it is probable that electrical practice in mines would be generally improved if more of the mine electricians were familiar with the best installation methods.

Dangers from Electrical Equipment.—The three principal dangers connected with the use of electrical equipment in mines are as follows: The danger from electric shock, the danger from explosions caused by electricity, and the danger from fire started by electricity. The chief sources of danger from shock are the trolley wire and other bare conductors. Another source is ungrounded equipment that has become charged with electricity through defective insulation or otherwise. The danger from electrical explosions arises from the occurrence of sparks and arcs in inflammable gas or dust. Sparks of sufficient size to ignite gas may be produced when a motor is started rapidly or operated under heavy load, when a circuit carrying current is opened, or when a circuit becomes grounded. A much larger spark is required to ignite bituminous coal dust, but such dust might be ignited by the opening of a circuit carrying a large current, or by flashes produced by heavy short circuits. The fall of a trolley wire might give both of these conditions. The danger from fire arises from grounds to coal or in the vicinity of inflammable material, from the flashing of motors under the latter condition, from short circuits, and the burning off of wires carrying heavy currents. Besides the above-mentioned dangers, the handling of explosives in the vicinity of electricity and the detonation of them by electric means give rise to others.

Safeguarding the Use of Electricity.—The practical solution of the problem of safeguarding the use of electricity in mines will require the adoption of protective measures and of devices that are simple, rugged, "fool proof," and as inexpensive as possible. At the same time both measures and devices must be entirely effective or they will become a menace. Although it will be necessary to investigate many possible causes of electrical dangers, some are already well known, and the desirability of protection against them is apparent. There is a field for devices for reducing the danger of shock from the trolley wire and for devices for preventing the ignition of gas by motors, switches, and other circuit-opening apparatus. There is a field for an acid-proof material for insulating wires and cables, and there is room for improvement in the methods of installing electrical equipment underground. The improvement of electrical conditions underground will doubtless be a gradual development, as has been the case aboveground where advancement in electrical practice has been continuous for many years. Most mine operators, if not all of them, would be willing to install safer electrical equipment if the market could supply it. Manufacturers are willing to develop especially safeguarded equipment as fast as they see a field for its use. Some of the manufacturers of this country are now developing motors and switches designed to be explosion proof, and the Bureau of Mines has always found manufacturers of electrical apparatus ready to co-operate in its electrical investigations.

The Electrical Section of the Bureau of Mines.—The electrical section of the Bureau of Mines was organised in 1909 to investigate the conditions under which electricity is used underground, in order to obtain data that will be of assistance to those State officials who have charge of the regulation and inspection of mines and to all who use or manufacture electrical mining equipment. The section is part of the mining experiment station of the bureau at Pittsburg, Pa. It is the purpose of the section to attempt to discover the causes of accidents from the use of electricity in mines and to suggest means for the prevention of such accidents; to make tests of the safety of electrical equipment under conditions most conducive to disaster; and to makes such tests of a general nature as bear upon the safety of electricity in mines, accidents attributed to electrical causes, etc. Although the function of the section is to investigate and test rather than to develop, facts that will be of value to those designing equipment are continually being learned in the process of testing and are always at the disposal of interested persons. Bulletins will be issued from time to time describing the tests made and the results obtained. The section is always ready to discuss, by correspondence or by conference at the Pittsburg station, the problems relating to accidents caused by electricity, the results of tests, or the means and methods of safeguarding electrical equipment.

The following tenders have been accepted by the P.W.D. for the various services mentioned, viz.: J. D. Wall, contractor, Fauresmith, Orange Free State, £998; erection of teachers' quarters, Zeekoefontein, Orange Free State. B. Ferraris, P.O. Box 8, Greytown, Natal, £1,590; laying out of grounds. New Law Courts, Bloemfontein. Sutherland and Murray, Box 477, Johannesburg, £8,844 14s. 3d.; drainage and sewage purification works, Rietfontein Lazaretto. Forbes and Co., Box 5188, Johannesburg, £1,670; additions to Johannesburg Hospital. G. B. Laffan, contractor, Pietermaritzburg, £534 13s.; drainage, Police Headquarters, Pietermaritzburg. M. F. Campbell, contractor, Cradock, Cape Province, £1,249; additions to Gaol at Cradock, Cape Province. Barker and Smith, 203, Commercial Road, Pietermaritzburg, £382 11s. 3d.; supply of sanitary fittings to Pietermaritzburg College. Coe and Bolton, contractors, Oudtshoorn, £2,600; alteration of public offices at De Rust, Cape Province. H. Brown, Box 3, Lower Umkomaas, £2,740; erection of school at Malvern, Natal. Sutherland and Roberts, P.O. Henops River, District Pretoria, £710; erection of police buildings at Delmas, district Pretoria.

Henry R. Merton & Co.,
LIMITED,
2, Metal Exchange Buildings,
Leadenhall Avenue, London, E.C., ENGLAND.
Cable Address: "MERTON," London.

BUYERS of all Classes of Minerals, Ores of Copper, Tin, Silver. Lead, Zinc, Antimony, Wolfram, Concentrates, Bullion, etc.

South African Representatives—
Messrs. PARRY LEON & Co.,
Mercantile Buildings,
P.O. Box 1101,
Simmonds Street, JOHANNESBURG.

Commerce and Industries.

Building Activity. Plans approved by eight leading municipalities of the Transvaal, according to the report of the Inspector of White Labour, have an estimated value of £216,876 for December, against £245,826 for November, a decrease of £28,950. Tenders accepted by Government for public buildings during the month, and not included in the above, amount to £42,059 14s. 1d.

* * * *

New Railways. A big programme of S.A.R. construction has already been outlined and has received legislative sanction. The Railway Construction Act—passed during last session of the Union Parliament—provided for fourteen new lines, or extensions, covering 526¾ miles, at an estimated cost of £2,490,984. A Blue-book issued within the past few weeks supplies full details. The following is a brief summary:—Cape: Caledon to Kykoedy, 50 miles, to cost £200,000; Graafwater extension, 37 miles, £161,580; Gamtoos to Patentie, 18 miles, £71,200; Llewellyn to Franklin, 5 miles, £30,055. Transvaal: Buurman's Drift to Zeerust, 31 miles, £111,300; Piet Retief to Vryheid (Transvaal section), 32 miles, £186,080; Sabie to Graskop, 21 miles, £114,949; Tzaneen to Messina, 148 miles, £750,000. Orange Free State: Reitz to Frankfort, 48 miles, £215,904; Lindley Road to Senekal 33 miles, £127,380. Natal: Stuartstown to Union Bridge, 16 miles, £50,000; Winterton to Bergville, 18 miles, £86,706; Greytown to Krantzkop, 33 miles, £172,130; Piet Retief to Vryheid (Natal section), 36 miles, £213,700. All the lines will be of the three feet six inches gauge save the Gamtoos-Patentie and Stuartstown-Union Bridge railways, which will be of two feet gauge only.

* * * *

Lourenco Marques Drainage. The Portuguese Minister for the Colonies has introduced a Bill into the Cortes at Lisbon which seeks to authorise the Government to call for tenders for the provision of a drainage system for the town of Lourenco Marques. Provision is made for the raising of a debenture loan up to £96,000 to meet the costs involved, this loan to be paid off by the Municipality in 60 equal annual instalments. Interest, which is not to exceed 4½ per cent., will be guaranteed and paid by the Provincial Government. The contractor must agree to accept debentures in part or full payment. The Municipality is to be authorised to create a sanitary rate and taxes to pay the instalments and meet the other expenditure for the maintenance of the system, etc. It will also be empowered to enforce certain bye-laws, by one of which the owners of houses, etc., will be forced to make connections with the main drainage system, so that ultimately every house will be served by drains.

* * * *

Money in Wattle. When Sir Henry McCallum some three or four years ago mentioned the fact that the Hon. Mr. Marshall Campbell was starting a wattle plantation on the coast, the experiment was subject to something (says the "Natal Mercury") almost approaching ridicule on the part of up-country wattle growers. It was stated that the tree would not come to proper maturity on the coast, that it would not strip, and failure was prophesied for the venture. However, all the pessimistic prognostications have been falsified, as the Natal Estates are now engaged in stripping some 1,200 acres at their Phoenix wattle plantation. The trees are stripping splendidly, and the bark is equal to any that has been produced up-country, and yielding capital results. It is said that the bark of trees of four years' growth contains as much tannic acid as the bark of trees eight years' old up-country. There are 4,000 acres under wattle at the plantation, on land which is the driest of the whole estate, and unfit for cane, so that the result is decidedly satisfactory.

Lever's Co-Partnership System. In honour of the visit of Sir William Lever, the employees of Lever Bros.' works, number 350, were entertained at an outing at the Umkomaas last week. Addressing the gathering the evening Sir W. Lever explained the co-partnership system, which extended to their Durban works. By this system, after five years' service, an employee of 25 years of age was eligible—he could not demand it as a right—to become a co-partner in the business. This applied regardless of the race and sex of the employee all over the world in Lever Bros.' works. An employee could not demand to be made a co-partner, as it was naturally necessary to reserve the right of accepting a partner in a business, and it depended on a man's attention and assiduity to business. A co-partner received dividends each year on his certificates, receiving another certificate each year equal to 10 per cent. of his salary or wages. The amount of co-partnership certificates distributed altogether, including preference shares held by widows, was £297,000. Sir W. Lever also referred to the extension of the firm's employees' benefit fund, under which men after 20 years' service, if unable to work, were entitled to an allowance, whilst on reaching the age of 65, they were entitled to pensions. The fund also benefited the widows and children of men who had 20 years' service with the firm.

* * * *

The Future of Capetown. As the joint metropolis of South Africa, the legislative capital of the Union, and a University city, must always take a foremost place in the development of the Union, and its commercial future is naturally attracting attention. The commercial, agricultural and manufacturing opportunities of the city are clearly set forth in an official handbook "Industrial and Commercial Inducements of Capetown," compiled under the joint auspices of the Corporation of the city of Capetown and the South African Railway Administration. The book reviews, concisely but comprehensively, all those facts which the manufacturer who is considering the possibilities of Capetown as a centre for the establishment of a local factory, will desire to be acquainted. The proximity of populous and thriving agricultural and pastoral towns, abundance of inexpensive labour, a plentiful and cheap supply of pure water and electric power, spacious and magnificently equipped docks, good building land adjoining the railway, specially low railway rates for manufactured goods from Capetown and coal to Capetown, these are some of the inducements held out to manufacturers. For the establishment of factories in Capetown and district, the handbook contains much useful statistical information and a number of illustrations.

* * * *

Union Railways and Harbours. The Railway and Harbour Estimates which have been laid on the table of the House of Assembly show that the estimated expenditure on the railways for the year 1912-13 is £10,398,873, compared with £9,352,906 in the years 1911-12, and that on the harbours £4,212,458, compared with £1,098,956 during the previous year. The main heads are as follows:—Maintenance of way and works, £1,383,600, compared with £1,129,738; rolling stock, £1,427,289, compared with £1,318,530; running expenses, £1,774,078, compared with £1,742,579; traffic expenses, £1,586,710, compared with £1,493,031; general charges, £269,682, compared with £303,722; superannuation, £150,000, compared with £125,000; depreciation of permanent way, £365,130, compared with £325,244; depreciation of rolling stock, £776,312, compared with £695,777; interest on loan capital, £2,633,306, compared with £2,198,285; charges on lines leased, £13,500, compared with £13,500; miscellaneous, £19,266, compared with £7,500. The total railway staff numbers 48,704, against 46,607 during the previous year, and that of the harbours 2,932 against 2,975.

Johannesburg Motor Garages and Suppliers of Motor Cars, Accessories, etc.

JUST ARRIVED—1912 MODELS

PHŒNIX AND VULCAN CARS

Trial Runs Arranged. Full Particulars from

REED'S GARAGE

GOVERNMENT SQUARE, JOHANNESBURG.

Phone 1434. P.O. Box 2720.

Dunlop Repair Shop

SEND YOUR TYRES FOR REPAIR OR RETREADING

TO THE

MANUFACTURERS.

DUNLOP GROOVED TREADS (manufactured in our English Factory) Fitted to any make of cover.

Burst Covers and Tubes properly repaired.

Call and inspect samples of our work.

Dunlop Repair Works

83, BREE ST.,
JOHANNESBURG.
P.O. Box 6370.
'Phone 831.

If you do your Own Repairs ——
Send your difficult Machine Work to

PILLANS Bros. & OWEN

Mechanical & Electrical Engineers,

SAUER STREET, MARSHALL SQUARE,
JOHANNESBURG.

Cylinders and Crank Shafts Accurately Ground, and Bearings Remetaled. ——

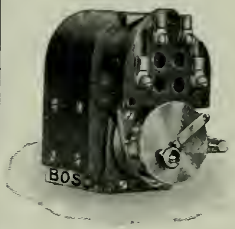
Accumulators Charged, Magnetos Fitted and Repaired. Tyres and Tubes Vulcanized.

BOSCH MAGNETOS.

TRADE MARK.

Type D. R. 4.

A large assortment of the latest types of **magnetos** and **spares of all kinds, dual ignition coils** (vertical and horizontal), **sparking plugs,** and **White & Poppe carburettors** kept in stock.


Type D. F. 4.

Sole Representative for South Africa:

F. HOPPERT

CORNER OF
Main & Simmonds Streets,
JOHANNESBURG.

Teleg. Address: "MAGNETOS."
P.O. Box 3503.
Phone 3130.

MOTOR COVER AND TUBE REPAIRS AND RETREADING.

For Expert treatment by the oldest firm of Tyre Specialists in South Africa send your work to

Johannesburg Vulcanizing Works,

Cr. Loveday and Marshall Streets.

P.O. Box 3912. Telephone 2304. Tel. Add.: "RETREAD."

When communicating with Advertisers kindly mention the

South African Mining Journal

Automobile Notes.

Cars and Prices.

The list price of many makes of cars in the past has often proved misleading to the prospective purchaser, when the actual cost, inclusive of every necessary extra, is submitted, and many buyers have practically decided in favour of a certain type of car advertised at a figure which probably only referred to the chassis and bodywork. Cars thus incompletely equipped can naturally be listed at an alluringly low price, which action, in effect, is tantamount to unfair competition, and the purchaser eventually is convinced that the anticipated value in point of his selection does not materialise as expected, when the cost of a complete set of wheels and tyres are reckoned upon, in addition to other accessories, including hood, screen, lamps, horn, etc. In response, therefore, to a growing desire on the part of the buying public several manufacturers to-day are listing their 1912 models complete, i.e., with all extras, and it is thought that this policy will in time be adopted by many makers, it being pointed out that such specialisation in the end gives to the purchasers much better inclusive value. Reference was made to "necessary extras," as expected with the complete car, but buyers might be reminded that additional extras, according to fancy, such as mileage and trip recorder, clock, etc., will at no time be included in the purchase price of a car, unless clearly set forth on the specification.

The Car as an Obstruction.

A case of much interest to motorists occupied the attention of one of the local stipendaries the other day, in which it was held that a motor car caused an obstruction by remaining for a considerable time outside a large store in a busy thoroughfare. It is just possible that the vehicle was some distance from the side path, and therefore occupied an undue portion of the street; otherwise it is difficult to imagine why a motor car should be singled out in this way for a special exercise of police vigilance, as even the casual observer making a round of the principal streets any weekday cannot fail to notice the numbers of stationary broughams, traps of various kinds, and wagons, all contributing in a more or less degree to street obstruction, not to mention huge merchandise cases and other impedimenta all of which pass muster in the eyes of the authorities. A by-law prohibiting the engine of a motor car running whilst the car is unattended, in the public street, is well known to all motorists, and the emission of black smoke from the exhaust is certainly reprehensible and involves a penalty in many places, outside Johannesburg, but taking into consideration the many allowable street nuisances in the last-mentioned place, such as the passage of lumbering ox wagons through the streets at mid-day for example, to the utter confusion of all other traffic, one cannot form any conclusion in the case of the motor car under review, other than excessive zeal on the part of some aspiring guardian of the law. It may, however, be remarked that the learned magistrate in this particular instance viewed the "obstruction" in quite a different light, and formally cautioned the accused on the charge.

* * * *

Despite the many contradictions given to the statements appearing about the American motor car invasion, the imports of motors to the United Kingdom from the United States continue to increase in an alarming way. Judging from actual statistics published in the British Motor Journals, and the fact that the leading American manufacturers are estabishing agencies broadcast in the three kingdoms lends additional colour to this view. The assumption, freely recognised, that the British manufacturer has the good will of the buyers in the kingdom, is not altogether sufficient argument to convince the public that the best article is to be found within their own shores, and the British objections to foreign importations, it may be said, vanish when anything of undoubted value for money is presented, and in the cheapening and perfecting of the notor vehicle there is no disputing, in the teeth of all criticism, that the American manufacturer is fast assuming a leading position.

Recent Accidents.

Attention might be drawn to the frequency of accidents to a variety of causes, involving considerable damage to cars, which have recently be reported, and for which claims in the ordinary way have been submitted to one or other of the several insurance companies who undertake this risk. There is no questioning the wisdom of insurance at all times, and, regarded from the proper standpoint, the motorist who fails

CONTINENTAL
THE WORLD'S LEADING TYRES.

FOR MOTOR CARS:
The Extra Heavy Square Tread Tyre;
The Tropical Renforcé Three Ribbed Tyre;
The Black Red Steel Studded, as used exclusively during the "Prince Henry Trophy" Race.

FOR MOTOR CYCLES:
The Extra Heavy Tyre, Ribbed Pattern;
The Rubber Studded, Non Slipping Tyre.

N.B.—All our Tyres are specially manufactured by our Home Company to suit the South African Climate and Roads, and stand UNSURPASSED in Quality.

STOCKS OBTAINABLE THROUGHOUT SOUTH AFRICA.

ALL MOTORISTS

SHOULD USE

TEXACO

PETROL

LOOK FOR OUR TRADE MARK.

RED STAR *AND A* GREEN T.

WE HAVE ONE BRAND ONLY.

—*A*—

High-Grade Motor Spirit,

THE BEST.

ASK AT ALL GARAGES FOR IT.

THE TEXAS COMPANY (S.A.) LTD.

to effect this simple provision is merely courting trouble by such inexplicable neglect. He may argue the exercise of careful driving to such a degree as to reduce the risk of accident to a minimum, and, presuming an accident does occur, it will be solely due to the negligence of the other party, and he will not be mulcted in damages and so forth. In theory such views may be advanced by the self-opinionated motorist in all good faith, but in practice nevertheless they must be bluntly classified as absurd. There is no driver, however skilful, who can afford to run the risks inseparably associated with motoring, as even when the greatest care is observed lack of judgment may result in an accident for which the motorist will be held responsible in nine cases out of ten, and even though he may be fortunate in winning his case it may so happen that the plaintiff cannot foot the bill, and the uninsured party is confronted with substantial costs. Therefore, considering the very modified conditions governing car insurance policies at the present time, and the purely nominal outlay in consequence exacted by many companies, in comparison to the value at stake, the motorist who ignores the risks apparent must be very short-sighted indeed. Any of the local insurance agents, it may be remarked, will furnish fullest particulars on application in regard to premiums and the many policy benefits accruing to the insured motorist in the event of accident, immediately his claim is established, and in justice to those who undertake this particular business it must be said that their conduct is just, clean and devoid of traps for the unwary, and merits the entire confidence of the motoring public.

The Auto-Carrier.

That neat run-about, the Auto-carrier, is rendering very useful service to many Johannesburg storekeepers whose light parcel service is considerable, and the future of this attractive little vehicle seems assured, especially when its true value is discovered by merchants who still cling to the horse-drawn appliances. Being comparatively fast, and capable of accomplishing much hard work at low running costs, it must in time appeal to numbers of tradespeople with whom economy may be a first consideration, and many grocers, butchers, laundrymen and others who may not be prepared to invest in the larger commercial motor vehicle should find in the Auto-carrier a reliable medium for the small and frequent deliveries which their respective businesses demand.

Mr. S. F. Edge.

Now that an enthusiast, in the person of Mr. S. F. Edge, has so far interested himself in the future of the motor industry in South Africa as to pay a visit to its shores it is certainly up to those representing the Home manufacturers to endeavour to assist Mr. Edge in the task he has set himself of studying colonial conditions. The old axiom: "Trust the man on the spot," holds good in this reference, and naturally the South African motorist community can best express an opinion calculated to command respect as to this country's peculiar requirements. The complaints in the past have in a measure been remedied, but still much improvement can be effected by the introduction of lighter bodies, heavier springing, greater clearance (at least four inches beyond the standard for cars in use at Home), even though the running costs may be increased thereby, and in addition the many features which climatic and other conditions demand. The question of durability, excellence of material and workmanship is *sine qua non*, and need scarcely be discussed when referring to most British-manufactured cars, but the other points may with advantage be brought to the notice of the visiting expert by the Johannesburg motorists during his stay, from the 10th to the 15th prox. In a future issue the date of Mr. Edge's proposed public lecture on things automobile will be referred to.

The Motor Car in War.

The announcement last week of the interesting part which motor cars were to play in Volunteer operations next week, by transporting irregular troops from Johannesburg to Krugersdorp, may have been somewhat premature. In any case, the scheme has had to be postponed, and the T.A.C. announce that at a later date the experiment will be tried. Those who, therefore, signified their intention of contributing to this novel idea (at least so far as South Africa is concerned) are released from their obligations on the 11th inst. in this respect.

A Motor Bioscope.

It will be interesting to motorists to know that there is a motor bioscope on tour in this country. Not only is this machine used as a means of locomotion, but it is also used to drive the dynamo which supplies the current. This is an entirely new idea, and also a South African one, as the car was fitted up at Bloemfontein. The machine is a 40 h.p. The dynamo is driven by a belt connected on to one of the driving shafts, the driving chain being disconnected. Provision is made for overheating by extra fans. When on the road the total weight is 5,828 lbs., which includes 3 white men and one native. This bioscope has showed in over 10 towns in the Cape Colony, Free State and Transvaal, and not once has it failed to commence at the advertised time.

Our Twenty-First Anniversary Number.

THE LAST WORD ON RAND MINING.

To commemorate the twenty-first anniversary of the founding of this journal, a special number, distinct from the ordinary weekly issue, will be published early next May. Fittingly to mark the occasion, the number will contain a comprehensive and concise account of the past history, achievements and present position of every gold mine on the Rand, illustrated and brought down to the latest possible date. It will review the industry generally as well as in its several technical aspects, and will include articles by experts on the chemical, mining and metallurgical progress and problems of the fields. A feature will be made of the personal side of the industry, and a section will be devoted to its technical and administrative leaders, enriched with portraits and other illustrations. Engineering on the Rand in all its phases, electricity, steam and air power will be treated, and the growth and progress of electric power supply will be exhaustively discussed. The gold mines of the outside districts and the tin, copper and coal industries of those districts will be dealt with thoroughly and at first hand. The great diamond industry of South Africa will have a section to itself, and here, as in the treatment of the base metal industries, the letterpress will be embellished with many striking and original illustrations. Mining in the Cape, Natal and Orange Free State Provinces will also be reviewed and the undoubtedly great mineral potentialities of those, as yet undeveloped, areas will be graphically set forth. German South-West Africa will find a place in the issue and a first-hand account of the diamonds, the copper and the tin mines of that promising field will be included. Moreover, the banks and other great financial institutions, the railways and harbours of the sub-continent will be adequately dealt with, and the whole problem of transportation as it affects the inland industrial centres will be reviewed. In this connection Capetown, Port Elizabeth, Durban, East London, Delagoa Bay and Beira will be separately and fully treated and their claims examined. Apart from mining, there will be a considerable section devoted to a description of the several subsidiary industries dependent on mining for a market. Chief among these will be cement, explosives, soap and candle-making, milling and the hundred and one activities that centre in the Rand. Rhodesia and Mozambique will be given a separate and extended treatment. The different mines will be described and illustrated, and the recent progress of the industry in those territories dealt with comprehensively and lucidly. In addition, the issue will contain a number of interesting and valuable contributions from leading men in the mining and financial world, many of whom have already sent their congratulations on the decision to issue a special commemorative number of the journal. Numerous letters received from past Rand engineers and mine managers, now resident in all parts of the world, contain offer of contributions. These will form a unique collection of valuable views and reminiscences, and will considerably enhance the interest of the volume. The work will consist of upwards of 350 pages, printed throughout on art paper. Prizes are offered to artists for the best design of a suitable and striking character, and particulars are given in another part of this issue of other valuable prizes to be awarded in connection with the number. It may be added that the work will be prepared, produced and printed in South Africa, and will aim to cover the whole field of mining in this country, and to prove a fitting monument to the great industry with which, from the beginning, the *South African Mining Journal* has been associated. The co-operation of everyone interested in the industry is being enlisted to make the venture a success, and already it promises to mark an advance on anything of its kind ever before attempted in South African illustrated journalism.

REVIEW.

Donaldson and Braby's Transvaal and Rhodesia Directory, 1912. Published by Donaldson and Braby's Directories, Ltd., African Banking Corporation Chambers, Johannesburg.

Among the most prominent requirements of a progressive commercial and industrial community, such as that of the Rand, for instance, is the need of a reliable and comprehensive directory. It is more essential than a dictionary. One can imagine a city of merchants and workers getting along fairly well by means of phonetic spelling, but far from conveniently without a directory. Messrs. Donaldson and Braby's Directories, Ltd., have met this requirement, for the third time, in a still better and more profuse way than on previous occasions, and so excellent is their reputation in the matter of directories that when one thinks of a directory one instinctively thinks of Donaldson and Braby. The issue for 1912 of the Transvaal and Rhodesia Directory is a monument of painstaking research and meticulous accuracy, as far as accuracy is obtainable among an ever-shifting population. The volume includes the whole of the residents of the towns and villages in the Transvaal, Northern and Southern Rhodesia, Mozambique and Manica-Sofala, Bechuanaland and Swaziland, and also complete farmers' lists for the whole of these territories. It is published at 25s. (including maps); postage, 2s. 6d.

Condensed Milk Combine.

The following is a copy of a letter which Mr. F. Reed, managing director of Norish and Co., Ltd., has addressed to the President of the Durban Grocers' Association:—The time has arrived when strong action should be taken to combat the rebate system of the Milk Combine. In the eyes of the Combine, and its representatives, it has now become almost a criminal offence for retailers to supply milks to their customers other than those manufactured by the Combine, and that notwithstanding there is a demand for cheaper milk. With one or two deserving exceptions, coast wholesale houses are interested in having the rebate system continued, and no assistance must be expected from them. Are the retail grocers of Natal less alive to their, and the public, interests than the traders in the Homeland? I do not believe it. By effective organisation and a resolute determination to have "free trade" in the sale of condensed milk, we can strike a blow at the methods of the Trust and its allies, from which they will not easily recover. The price of the Combine's milk in South Africa has been raised by 4s. 6d. per case within nine months, but to New Zealand it has not been raised at all. The New Zealand tin weighs 15oz. against our 14oz.—further difference of 1s. 5d. per case. South Africa thus pays 5s. 5d. per case, or 38½ per cent. more for the same article than New Zealand. Why? Because in New Zealand there is open competition, and no throttling rebate system. Within two or three years we shall have condensed milk factories in South Africa. Unless the methods of the Combine are fought, our own South African milk cannot get a market. Will South Africa tolerate the stifling at its birth of one of the most important future industries in order that a foreign combine may fatten at the general expense. A campaign is being planned by a number of Maritzburg grocers to achieve the object every independent, patriotic trader should have in view. It seems to me your Association is the body to direct the campaign in Durban."

* * * *

Messrs. Parry, Leon & Co. write:—We have pleasure in advising you that owing to the extension of our business, it is necessary for us to secure more commodious premises. We are, therefore, moving to Exploration Buildings, Commissioner Street, on February 1st, 1912. Coast connections: Capetown, Messrs. Samuel Lee & Co., P.O. Box 702; Port Elizabeth, Messrs. Parry, Leon & Hayhoe, P.O. Box 185; East London, Messrs. Webster & Co., P.O. Box 2; Durban, Messrs. Parry, Leon & Rayner, P.O. Box 20; Lourenco Marques, Messrs. Torre do Valle & Co., Ltd., P.O. Box 143.

Contracts Open.

The Benoni Municipality invites tenders for the supply and delivery to Benoni of certain fire appliances (29th February); also for the supply of corrugated steel pale fencing material (21st February).

The Municipal Council of Johannesburg invite tenders for the erection and completion of the remainder of the Market Buildings, Newtown, Johannesburg (14th February); also for the supply of rolled steel joists (Contract No. 422) (10th February); steel poles (Contract No. 423) (19th February); also for the supply of Bitumen and Insulators (16th February); also for the supply of bricks (20th February).

The Secretary of the Tender Board, South African Railways, invites tenders for the supply of Bridgework for Mooi River—Estcourt Deviation; Bridgework for Umfolosi Bridge (12th March); also for the flooring of platforms, new Pretoria Station (20th February); also for supplying and laying asphalte in connection with floors of Germiston goods and tranship sheds (20th February).

The Engineer-in-Chief, S.A.R. Offices, Johannesburg, invites tenders for the masonry on two section of 14 miles on the Lindley Road—Senekal Railway (23rd February).

The Chairman of the Tender Board, Provincial Secretary's Office, Bloemfontein, invites tenders for the undermentioned service: Erection of a bridge of two spans of 40 feet each over Liebenberg's Vlei River, District Bethlehem, Orange Free State (20th February).

The Chairman of the Tender Board, Attorney-General's Office, Pietermaritzburg, invites tenders for the erection of school, Paulpietersburg, Natal; erection of school, Nottingham Road, District Pietermaritzburg, Natal (4th March).

The Chairman of the Tender Board, Provincial Secretary's Office, Market Street, Pretoria, invites tenders for additions to the school building at Bethal, Transvaal Province (1st March).

The Chairman of the Union Tender Board, P.O. Box 371, Pretoria, invites tenders for the supply of the undermentioned service to the Department of Posts and Telegraphs: 6,000ft. steel pipes, 3in. internal diameter, coated inside and out with Angus Smith's compound, weight per running foot to average 5¼lb. The interior surface of the pipes to be perfectly smooth. No particular pipe or joint is specified, and firms submitting quotations will be required to supplement their tender with the fullest information (21st February); also for the supply of uniforms to the Department of Commerce and Industries for Customs Officers for the period commencing the 1st July, 1912, and terminating the 31st March, 1915 (10th April); also for the supply of Dry Cells to the Department of Posts and Telegraphs, Capetown, Johannesburg, Pietermaritzburg and Bloemfontein (6th March).

Tenders Accepted.

The Government Printer, Pretoria, has accepted the tender of the Argus Printing and Publishing Company, Limited, Capetown, for printing and supplying 45,000 letter bill books for the sum of £1.593 15s.

The Union Tender Board has accepted the tender of Messrs. W. Hosken and Co., for the supply of certain power plant.

TENDERS ACCEPTED BY GOVERNMENT.

Repairs and alterations to public offices, Ceres, Cape Province.—Mr. J. P. J. Bosman, Main Street, Ceres. Alterations and additions to Robinson and Co.'s premises, Lourenco Marques.—Mr. H. le May, Lourenco Marques. Erection of bridge over the Hollesluit River, Worcester, Cape Province.—Mr. F. B. Smith, Brookfield, Breda Street, Capetown. Erection of public offices, Adelaide, Cape Province.—Messrs. F. H. Tallent and Co., 3, Sailsburg Street, Woodstock. Erection of public offices, Prince Albert, Cape Province.—Messrs. Stark and Co., 52, Polo Road, Observatory. New kitchen block and scullery at the Hospital, Barberton.—Messrs. Duncan and Thompson, Box 156, Barberton. Lay-out of ground at the Law Courts, Bloemfontein.—Mr. B. Ferraris, Box 8, Greytown. Erection of School, Greyville, Durban.—Mr. T. R. McKinley, Old Dutch Road, Durban. Additions to Sunnyside School, Pretoria.—Thos. Brown, Box 240, Pretoria. New wing at Students' Hostel, Pietermaritzburg.—Messrs. Robt. McAlister and Sons, Pietermaritzburg. Additional accommodation, New Brighton Native Reserve Location, Port Elizabeth.—Messrs. Cruickshank and Co., 10, Stanley Street, Port Elizabeth. Repairs to pubic offices, Umtata, Cape Province.—Mr. W. J. Gwilliam, Kingwilliamstown. Repairs to Cape Mounted Rifles Barracks, Umtata, Cape Province.—Mr. W. Holfele, Umtata. Repairs, etc., Driver Drift Bridge, Kingwilliamstown.—Messrs. Sobey Brothers, Queenstown. Erection of school, 48 pupils, Vlakplaats No. 912, Lydenburg.—Mr. Alex. Greenhorn. Additions to school, Havelock Road, Durban.—Messrs. Jesse Smith and Sons, Commercial Road, Pietermaritzburg. Alterations, drainage, and sewerage purification works at the Lazaretto, Rietfontein, near Johannesburg.—Messrs. Sutherland and Murray, Box 477, Johannesburg. Erection of pont over Assegai Rover, Piet Retief.—Mr. John Brand, Vants Drift, via Dundee. Repairs to public offices, Humansdorp, Cape Province.—Messrs. Reynolds and Steyn, Humansdorp. Reconstruction of superstructure, Klein Berg River Bridge, Paarl.—Mr. C. Schuddink, 3, Sailsburg Terrace, Queen's Road, Seapoint. Erection of bridge over Blesbokspruit, Heidelberg District, Transvaal.—Messrs. Ingram and Co., Box 775, Pretoria. Erection of bridge over Schulp Spruit, Wakkerstroom.—Mr. C. Polto, box 594, Pretoria.

THE SOUTH AFRICAN

Mining Journal,

WITH WHICH IS INCORPORATED

The South African Mines, Commerce and Industries.

ESTABLISHED 1891.

VOL. IX., PART II.] FEBRUARY 17, 1912. [No. 467.

HEAD OFFICE: 119-126 Exploration Building (3rd Floor).

Telephone **913.** P.O. Boxes **963** and **418.**

Cable and Telegraphic Address: **"MINING JOURNAL."**

LONDON EDITOR AND MANAGER FOR GREAT BRITAIN: Percy Snowden, c/o National Bank of S.A., Ltd., Circus Place, London Wall, E.C., to whom all communications must be addressed.

GERMAN AGENTS: Dean-Mayer Co., Linkstrasse 39, Berlin, W., 9; Rudolf Mosse, Jerusalemer Strasse, 46-49 Berlin, S.W. 19; H. C. Wolff, Residenzplatz, M. 85, Kempten, Bavaria.

AMERICAN AGENTS: Gotham Advertising Company, 95 Liberty Street, New York.

Copies of this journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Office as above.

NOTICE.—The postage of this issue of the *S.A. Mining Journal* is: South Africa, 1d. All other parts, 2d.

CONTENTS. PAGE

Notes and News 853
Topics of the Week:
The Eight Hours' Day Question 855
Water Supply 856
South Africa and the World's Gold Output 856
The Benoni Problem 857
The Matter of Development 858
Rand Mining as an Investment 859
The Year 1911 with Eckstein Mines 860
Mines of the Witwatersrand—X. Village Deep, Ltd. ... 861
London Diamonds 864
Stagnation in Rand Mining Methods 865
The Geology of the Rand 867
Progress in Cyanidation of Gold and Silver Ores during 1911 869
Correspondence and Discussion: "The Tin Fields," "Circular v. Rectangular Shafts." 871
Mining Men and Matters 872
Rhodesian Section:
Latest Mining News 873
A New Flotation 874
January Output Constitutes Another Record 876
S.A.M.J. Anniversary Number 877
The Week in the Sharemarket 879
Engineering Notes and News 880
Finance, Commerce, and Industries 882
Automobile Notes 885
Index to Advertisers.

Notes and News.

The Mining Exhibition. The Mining Exhibition, which was opened under such favourable auspices last week by Mr. H. O'Kelly Webber, President of the Chamber of Mines, has proved a gratifying success. Much good may be expected in that direction, provided the efforts of those who promote an exhibition are generously supported. A description of leading exhibits was given in our last issue. Later on we propose to publish interesting photographs of many of them.

* * * *

The Kromdraai Line. What is commonly known as the Kromdraai Line, that, namely, along the lower dolomite horizon between Krugersdorp and Irene, is again the scene of a certain degree of mining and exploratory activity. It is reported that a small battery is to be erected shortly on Knoppieslaagte to mill ore from the Kromdraai reef in that locality, and it is further stated that a German company is prosecuting a search for vanadium in the neighbourhood of Rooikranz. Whether there is vanadium upon the property or not, is hard to say; there is unquestionably a good deal of galena, some of which carries fairly high values in silver.

* * * *

Allegations of Salting. We learn of a sensational development in connection with a certain diamond prospect situated in the Transvaal which has recently attracted a good deal of Johannesburg and Pretoria attention. Unfortunately it has also, it seems, attracted a certain amount of capital. It now appears that the "mine" is by no means all it was claimed to be; it is indeed stated that deliberate salting has taken place, and in all probability a good deal more of the affair will be heard in the near future.

* * * *

A Notable Article. In another part of this issue we print a notable article by Mr. William Blane, on present-day Rand mining methods. Mr. Blane is about to complete a visit of some weeks to Johannesburg, and his views will be found refreshingly outspoken and thought-compelling. To those of us who have followed the changes in Rand mining during the past ten years, it may seem that Mr. Blane underestimates some of the difficulties, and overlooks much of the progress that has been made. But, as an old mine manager, and as an unbiassed observer who has revisited in the most sympathetic spirit the scene of his former labours, Mr. Blane's suggestions are not lightly to be ignored. At any rate, we hope to see his article evoke a discussion that cannot fail to be of some profit to the industry.

* * * *

Sir Wm. Ramsay and "Artificial Gold." Sir William Ramsay, F.R.S., the distinguished Professor of Chemistry at University College, announces that there is no authority for the use of his name in connection with the raising of money for an alleged process for the production of gold by artificial means. Sir William doubts whether gold will ever be produced artificially; but, with natural scientific caution, he does not care to commit himself absolutely on the subject.

* * * *

Gold from the Sea. An interesting article entitled "The Facts About Gold, Silver and Iodine in Sea Water," by Hy. S. Blackmore, appears in the January number of the well-known engineering monthly "Cassier's Magazine." "It has been ascertained and determined by the highest authorities," remarks the writer in the course of the article, "that gold occurs and exists in sea water approximating one grain to the ton, and silver two grains to the ton in practically uniform proportions and percentages by analyses of sea water obtained from all parts of the globe." He announces that the chemical precipitation or separation of gold, silver and iodine from sea water may be regarded as an accomplished fact, regardless of the circumstance that the said elements are present in an extremely minute or diluted form. The whole question of profitable recovery is purely an engineering problem, and depends upon the conditions that the precipitate shall not be lost by suspension in the circulating currents of associated water. The apparatus must, says the writer, be so designed that large volumes of sea water may be handled and chemically treated through the agencies of tides or other means ecomonically, without the necessity of artificially generated, supplied, or applied power!

* * * *

South African Gold Trust. Depression hits the finance concerns much harder than their mining subsidiaries. The preliminary particulars of last year's operations manifest how severely the South African Gold Trust's earning powers have been restricted. The profit is less than in 1910 by £117,835, a decline in excess of 50 per cent. Shareholders get a balance dividend of 2s., making 3s. 6d. for the year, as against 6s. in the preceding twelve months. Even so, the carry forward has been reduced by £11,075. Below are tabulated the salient features of the last three years:—

	1911.	1910.	1909.
Profit (after all outgoings) ...	£107,976	£225,811	£268,402
Ordinary dividend	87,500	150,000	125,000
Ordinary per share	3s. 6d.	6s.	5s.
Written off wasting assets ...	—	50,000	100,000
Carried forward	88,804	99,879	106,620

* * * *

S.A. Portland Cement Industry. It is known that for some time past inquiries have been made in the Transvaal on behalf of the Associated Portland Cement Manufacturers (1900), Ltd., for material suitable for the making of cement. A large number of samples have been examined in the laboratories of the University College, it is said, not by any member of the staff, but by a chemist specially employed by the Corporation. It is reported that a suitable material at a convenient site has been obtained, and that the necessary funds for the inauguration of the undertaking are now being provided. As to the first point, we have no definite information; with regard to the second there appears no reason to suppose that the financing of the concern will be a matter of difficulty. The share capital of the company, issued and fully paid, is £4,150,860, and the debenture capital £4,641,493. Last month the Law Debenture Corporation, Limited, offered for sale £1,400,000 five per cent. second debenture stock of the cement company at the price of 91 per cent. and in the circular addressed to the Law Corporation by the secretary, referring to the issue, it is stated *inter alia*: "The directors' policy includes the erection of works in certain colonies and foreign countries in which the company's brands already holds a commanding position, and in which the directors feel that prospects of success are assured."

* * * *

Animal Transport in Rand Mines. As a result of the amalgamation of Witwatersrand mining properties and the designing of shafts to serve much larger areas than hitherto the tendency to drive longer levels naturally follows. Present day mining practice on these fields favours the concentration of work at main shafts, the gravitation of ore to main hoisting stations, and the concentration of tramming operations along main haulage levels. Such levels have, for instance, been introduced at the Modder B and Village Deep (Turf Mines Section) properties. The intention is to employ mechanical haulage on these levels, but pending the installation of the permanent haulage equipment animal transport is being resorted to. Mules and ponies, although they have never been used on an extensive scale on the Witwatersrand, have been employed at a few properties for a long while past. It seems, however, that the driving of larger and longer levels than hitherto will give rise to their employment more extensively than heretofore, at any rate during the installation of mechanical haulage, which, of course, takes some time to complete.

Transvaal Chemical Company. The event of mail-week was the exceptionally successful issue of 150,000 preference shares at par by the Transvaal Chemical Company, Limited. The company has had a prosperous career, and for the past seven years has paid dividends of twenty-five per cent. on its Ordinary Shares. The authorised capital is £350,000 in 175,000 Preference shares and 175,000 Ordinary shares of £1 each, of which 150,000 Ordinary shares have been issued. The company was formed in 1896 to acquire the undertaking of the Transvaal Chemical Company, established in 1892. It manufactures sulphuric acid, treats and deals in ores, and has several branches which manufacture, refine and sell oils, lubricants, candles, soaps, manures, etc., and it exploits a mineral water spring. The company also owns 13¾ mining claims at Delmore, and holds 27,000 out of 30,000 £1 shares of the Oil and Fat Industries Ltd., of Durban. A reserve fund of £40,000 has been built up, and the profit for 1911 amounted to £47,982. The field of business has since been largely extended, several branches having been added. The proceeds of the present issue are intended (a) to provide for the extension of the metallurgical operations of the company, not only in connection with the treatment of auriferous ores, but also having regard to the steadily increasing production of base metals; (b) to provide for increasing the company's interests in whaling, fishing, and other industries, and the extension of the oil and fat factories and refineries; and (c) to furnish additional working capital. The list of applications will close on or before 25th instant.

* * * *

The Diamond Outlook. According to mail advices, no change has occurred in the diamond market. A very good business has again been done in both cut and rough stones. The Diamond Syndicate has sold with great ease the output of the Wesselton Mine, and will offer part of the December output of the Dutoitspan. Trade advices leave no doubt that these goods will find ready customers, the demand being much in excess of the supply. The Premier Company has likewise disposed of all its goods, and will not have another shipment to show for some weeks. Inquiry of the important outside firms reveals that they are more than satisfied with their sales since the beginning of the year. The big American buyers, with few exceptions, have arrived in Antwerp and Amsterdam and London, and are completing their purchases. A great deal of business is also reported from Argentina, where is purchased only very fine stuff. The country is very prosperous. Well-informed houses in the trade are so impressed with the important dimensions the diamond business is assuming in the Republic that they have opened offices in Buenos Ayres. The local trade in Antwerp is settling down to its normal condition again now that the worst of the small failures are over, and it is expected that business among the local dealers in common goods will speedily recover. In fact, several very large parcels of boart and similar class goods have, through the shake-out of the small people, passed into stronger hands in Antwerp. Altogether, the market in every department remains in a satisfactory condition, and a great expansion all round is being looked for in the immediate future.

* * * *

The Chartered Report. The B.S.A. Coy.'s report invariably makes a belated appearance, and that which has just been issued in London deals, as usual, with an administrative and financial year, which expired eleven months ago. Of course, a mass of detail and statistics has to be collected and segregated from various parts of the vast territory governed by the company, and this is the main deterrent to the publication of an earlier statement each year. However, the report states that for the year ending March 31, 1911, the revenue for the Southern Rhodesian Administration was £773,270, and expenditure £752,067; and the supplementary figures from the period April to November, inclusive, were: revenue

£577,931, expenditure £507,776. The figures for North-Western Rhodesia were: Revenue £78,204, expenditure £131,425; North-Eastern Rhodesia: Revenue £25,413, expenditure £48,634. The total administrative and commercial accounts show a credit balance of £170,610. Nothing is said in the report as to the declaration of a dividend, and shareholders it seems must remain patient and await the distribution of a profit. In considering the B.S.A. Company it is difficult for the ordinary shareholder to appreciate the dual entity of the concern. It is not an ordinary stock market flotation, operating with the avowed intention of earning profits for shareholders; it is at once a financial venture and an important colonising force in the expansion of the British Empire. As an Imperial asset one cannot quarrel much with the policy of the Board of Control or the report now under consideration. Thus this document emphasises the importance of Lord Gladstone's visit, and also that of the frequent visits of directors. The progress of the country, it says, is evidenced by the fact that imports have increased by 25 per cent., and population has increased by 87 per cent. in seven years. Bulawayo, it is stated, has recently made great strides, and importance is attached to the fact that there is an increasing number of white children attending Government schools, in which there are facilities for first-rate education, superior to those in the rest of South Africa. The directors are considering a scheme for improving health conditions and the education of natives. The revenue of Northern Rhodesia is expected steadily to increase with the extension of settlement. As regards operations for profits, however, the cabled statement before us cannot be regarded as a very vital document. The mining and commercial side of the report says that although there has been no sensational improvement in any single direction, there has been good steady progress. Land sales increased by 330,000 acres, and the receipts of the Rhodesia and Mashonaland Railways showed an increase of £25,400. The gold output was a record. The report considers that the best possible policy to make the country profitable and attractive to settlers is to obtain the most expert advice for the supervision of industries, and urges the importance of extending ranching and improving stock. The report concludes by remarking that the development of the country has again been handicapped by the shortage of labourers, and that it is essential to attract natives from the north to provide good conditions. We shall await receipt of the report in full with a large measure of interest.

* * * *

Sir Abe Bailey on the Situation.

Though his speech at the luncheon offered him at the Union Club this week was mainly of a political nature, Sir Abe Bailey made an interesting and hopeful reference to the mining industry. He admitted that there was depression in the country, but he did not think there was any reason for that depression. Economically they had a stretch of fifty or sixty miles of perhaps the best part of the world. Why, he asked, should people be depressed? He could only think the cause was political. They had here an industry and it was only right that the mine owners and the shareholders should get interest on the money invested. It should be remembered that the Rand existed on a 4s. and 5s. margin. Everything should be done to reduce working costs, but they had also to consider the interests of property owners. Many promises had been made to the miners. They had not been fulfilled in many instances, and that was why both parties had suffered along the Reef. The miner had to be considered, and there was no man more willing than the miner to meet a situation. He had always been accommodating, and no political party could desire to succeed without making friends with the worker. The worker was the man who ruled the country. Then there was the agricultural interest, which was the greatest interest of all this country, and unless the reduction of working costs was going to assist the agricultural industry they were going to lose the support of the country districts and the farmer. After uttering these excellent sentiments, Sir Abe paid a tribute to Sir Leander Jameson, condemned the Government's Settlement Bill as a dole-providing device, and declared his faith in the ultimate triumph of Unionist principles.

TOPICS OF THE WEEK.

THE EIGHT HOURS' DAY QUESTION.

The difficulties encountered by mine managers along the Reef in getting the new eight hours' day regulation into satisfactory working order have not been lessened by the latest proposal of the leaders of the Labour Party. Mr. W. H. Andrews is credited with the intention of bringing in a Bill to amend the regulation by making the eight hours apply from "bank to bank," instead of "at the face." At the time the Act was passed the whole question was fairly and fully discussed, and it was clearly proved that an eight hours' day "bank to bank" was a wholly impossible suggestion. The eight hours' day "at the face" was, however, accepted by the managements, despite the fact that it meant a considerable dislocation of existing methods, and to some of the poorer mines on the margin of payability a serious and direct loss. While the managements, however, accepted the regulation and have been making every effort to abide by it, the measure has been met with opposition from two quarters. On the one hand, the contractors find themselves sadly hampered in their efforts to get their allotted tasks completed satisfactorily in the required time, and on the other, the Labour Party leaders are trying still further to reduce the working time by including in it the varying periods which the men take in getting to and from their work.

As an example of how the whole question is misunderstood, one may quote the *South African News*, of Capetown, which in commenting on Mr. Andrew's Bill for amending the Mines Act, says the proposed amendment is the outcome of dissatisfaction felt by underground workers in regard to the application of the system which came into operation in last January. The eight hour day clause of the Act, it adds, is being applied by the majority of mine managers in an entirely unsympathetic spirit, and in a manner calculated to deprive miners of the benefits they naturally calculated to reap from the new law. Some managers, it is readily admitted, are doing their best to meet the men and make the law acceptable in every way, but they are the exception, not the rule. The men complain that time is wasted in conveying them to and from their work, which results on the average in a nine and a half hours' day, bank to bank, which is no shorter than the old nine-hour working day. The paper suggests that Parliament should fix an eight and a half hour day, bank to bank, under which it would be to the obvious interest of the mine management to facilitate and expedite in every way possible the lowering and hoisting of the men. The paper believes this would satisfy the men themselves, and hopes that at a suitable stage an amendment on the lines suggested will be introduced, and that the member for Georgetown will accept it. It does not give Mr. Andrews all he wants, but it gives him a lot. By insisting on the extreme of an eight hour day, bank to bank, it adds, he will probably get nothing.

Of course the short answer to half-informed views of this sort is that the new regulation has not yet had a fair trial. It is far from being true that the managers are unsympathetic. Indeed, it is to their interest that the new regulation should work with the minimum of friction, if the men are not to produce diminished results. Again, the Labour argument that an eight hours' day from bank to bank is necessary because of the phthisis evil does not hold water. In point of fact it is found that the less leisurely methods necessitated by the reduced working hours increases the danger from dust and fumes. These evils are being fought, and will have to be fought more strenuously still, but not by haphazard or panic measures. It is earnestly to be hoped that the Government will see the wisdom of giving the new regulation at least a fair trial.

SOUTH AFRICA AND THE WORLD'S GOLD OUTPUT.

It is now possible to estimate the output of the various other gold-producing countries of the world and to gauge the place of South Africa on the list. Apart from Transvaal and Rhodesian figures, we have to rely on estimates for the other 1911 returns. It is useful to compare these with the production of five years earlier. The table below gives the official figures of gold production for the principal gold-producing areas of the world for 1905 and 1910, to which is appended an approximate estimate of the yield during 1911, for all producers other than the Transvaal and Rhodesia. The exact figures for the last-named being available. It should be noted that the data for 1911 for the United States, and the world's production for 1905, 1910, and 1911 are the figures of the Director of the United States Mint, since considerable differences exist between statistics prepared by different authorities. It would appear that the output of gold is no longer increasing at so rapid a rate as formerly, since the increase 1905-1910 was approximately 20 per cent., while the increase in 1911 over 1910 was only 2 2-3 per cent. It is also obvious that practically all the increase is due to African production, since the output of the United States, which increased slightly during the five-year period, is now almost stationary. Africa, on the other hand, shows a general advance, with the exception of Rhodesia. But even in the case of the Transvaal the rate of increase appears to be slackening, for it will be noted that the increase for 1905-1910 was nearly 53.5 per cent., while the increase during 1911 was 9.6 per cent. It would seem, therefore, in the absence of unexpected changes in the status of the industry, that a period of declining world's outupt lies in the not remote future.

GOLD PRODUCTION OF THE WORLD.

	1905. Dollars.	1910. Dollars.	1911. Dollars.
Africa, Transvaal	101,225,558	155,730.260	175,000,000
Rhodesia	7,203,865	12,607.791	13,239,475
West Coast	3,427,995	3,674,087	5,500,000
Madagascar	1,369,553	2,149,721	—
United States (total)	88.180,700	96,055.200	96,233,528
Alaska	14,925,600	16,987,990	16,002.976
Australasia (total)...	85,970,779	65,329.705	59,000.000
Western Australia	40.490,000	30.393,000	29,800,000
World's production...	377,647,700	454,000,000	466,000,000

From the *Mining and Scientific Press* we learn that California has, during the year just past taken first place, so long held by Colorado. Nevada remains in the third place, pressing Colorado closely, and Alaska has fourth place, which it assumed in 1910, dropping from second in 1909. The largest gold mine in the world, from the standpoint of tonnage, is the Randfontein Central, which hoisted 217,984 tons and milled 212,510 tons during October, 1911. The greatest dividend payer of the year was the Goldfield Consolidated, which declared dividends for the year amounting to over 7,000,000 dollars, having milled approximately 338,000 tons of ore of a gross value of over 10,600,000 dollars. From the same exchange we learn that the largest mine in America from the tonnage standpoint is the Homestake, which milled over 1,500,000 tons in 1911, though this is almost equalled by the Alaska Treadwell mines, which milled 1,500,000 tons. Other American estimates place the total gold production of the world for 1911 at £94,677,000, an increase of £804,000 over the output for the previous year. There were no great or important new districts opened, and the further expansion recorded was mainly due, we may repeat, to the higher output from the Transvaal, which amounted to £34,991,620, as against £32,001,735. On the other hand, a considerable decrease is shown in the output from Australia, which for some years past now has been steadily on the down grade, and a smaller, but still important, decline in the Indian production, due to the lower grade of ore recently encountered in the important Kolar fields. Russia, which last year seemed likely to considerably increase its output, suffered a setback owing to the drought which interfered with placer mining in Siberia; and only small increases are exhibited in the returns from Canada and West Africa. The United States still retains its position as the second gold producer of the world, the Transvaal, of course, being first. Australia is now a poor third, with Russia fourth, and Mexico, which lost ground owing to the revolution, fifth. It is noticeable that the comparatively new fields in Siberia, Alaska, Rhodesia and West Africa have all belied the promise of their early days, and, with the possible exception of Siberia, it does not seem probable that any one of them will take front rank as a gold producer. This emphasises the importance of the Rand industry, the output from the Transvaal last year constituting 38 per cent of the world's output, as against 33 per cent. in 1910.

RAND WATER SUPPLY.

The whole question of water supply to the mines and municipalities of the Rand has again been raised by the recent shortage and the probability of the demand expanding in the near future. The somewhat undignified squabble between the Water Board and the Johannesburg Town Council has attracted attention to the matter, but it is to be hoped that the Town Council will come to recognise its unfitness to pose as a critic of a body that is manifestly doing its best in face of great difficulties. The Water Board has issued a very plain and unambiguous statement of the whole position, and its appeal for support against a possible crisis in supplying all its constituents merits a general response. The report issued by the Board this week deals at great length with the present sources, and states that the Water Supply Sub-Committee has expressed the opinion that very strong representations should be made to the Union Government regarding the urgent necessity that exists for obtaining further additional supplies from mining sources under the Irrigation Act, or otherwise, in order that the Board may have an adequate supply to meet the demands of industrial as well as domestic consumers. The sub-committee thinks also that, if found necessary, a deputation consisting of representatives of the Municipalities, the Chamber of Mines and the Board, should interview the responsible Minister and lay before him full particulars regarding the water question, the difficulties by which the Board is at present beset in maintaining even a limited supply to its constituents; and the danger to the health and the industrial well-being of the community on the Rand if, as the result of a protracted drought or from any other cause, a serious shortage of water should occur in the proximate future. From the exhaustive report of the Board we further learn that the consumption within the Johannesburg Municipal area, mainly for domestic purposes, during the past four months, has been, approximately, three million gallons a day, out of a total available supply of about eight million gallons, leaving only five million gallons to supply the domestic and industrial requirements of the remainder of the community. Census figures show that the population within the Board's area of supply has increased, and is gradually increasing, and what with this and the extended use of potable water in mine workings and compounds now made compulsory by Government regulation, the normal domestic and health requirements of the Rand, apart altogether from industrial needs, have grown considerably of late, and will no doubt continue to do so. The provision of further supplies sufficient for all purposes and in all circumstances must, therefore, be considered a matter of urgency, and the proposals which are now being considered for obtaining such supplies should receive the full support of every constituent authority of the Board. The report points out that the recent rains have only temporarily relieved the position by reducing the demand, and that, in the absence of heavy and fairly frequent falls during the remainder of the present summer season, the yield from the Zwartkopjes sources cannot be expected to improve, and may, in the event of a recurrence of drought, fall away still further. The contingency of a serious water shortage therefore demands urgent consideration, and in the interests of the people and industry of the Rand it is to be hoped that all petty differences of opinion will be sunk in the effort to secure fresh powers and supplies for the Board.

THE BENONI PROBLEM.

Finance the Key to the Situation—The Importance of Obtaining Revenue—Further Assistance Obviously Necessary.

The attention of those who take an interest in the share market is for the moment centred upon the Benoni Consolidated Mine. People who bought the shares at what may be called top prices are beginning to ask, as they see them tumbling down towards bed-rock: "What is going to happen to the concern in the very immediate future?" From the beginning of operations in November, until the end of January, there were milled 37,783 tons, from which 9,185 were recovered, or at the rate of nearly 5 dwts. per ton milled. It is impossible to draw any useful conclusions from these figures, because in the first place the plant has not yet become "conditioned," in other words, it has been and is still absorbing gold, which in the ordinary course of things would be obtained from the plant in the usual way, and in the next because the cyanide plant has not been working regularly. As has been explained by the board, the slimes plant has given trouble from the outset, for one reason or another, and slime treatment has, therefore, been practically speaking in abeyance. What is generally known, however, is that the debt of the company has been of necessity increased in the meantime—according to the last quarterly statement the net capital expenditure for the quarter, less revenue, was £52,764, of which £33,126 was for underground work and surface equipment. Since the footage driven, risen and sunk for the period only totalled 602.5 feet; a great portion of this last sum may be included in the amount already provided according to estimates. In a previous article dealing with the Benoni position we ventured to say that the company would probably start with a debt of about £150,000. With this as a basis one would probably not be far wrong in assuming that the debt has by this time approached something like £175,000. The question now, of course, is whether the prospects of the company are sufficiently good to warrant advances from other sources until the concern is put upon a satisfactory paying basis. Working costs in January were apparently 21s. 1s. 0½d. per ton milled. There is certainly room for improvement here, although it must be remembered that the cyanide plant was not in full swing. Under existing conditions, moreover, such as the general want of native labour and its consequent expense, and other difficulties incidental to preliminary operations the costs are naturally high.

Revenue Urgently Needed.

It is of the utmost importance that revenue should be obtained without delay, and upon as large a scale as the plant is capable of. The debt, it will be remembered, is to be spread over a period of five years, and assuming that the additional amount incurred falls under the terms of the same agreement, the sum to be provided annually would be between £30,000 and £40,000. An equivalent amount would be required to pay a dividend of 10 per cent. on the issued capital, so that altogether a clear profit of £80,000 a year, or roughly £7,000 a month would be the least that shareholders would have a right to look forward to. It remains to be seen whether the mine is capable of doing this on the full crushing basis of 20,000 tons per month.

Much depends on the development results. At the end of 1911 the ore reserves were given as:—

	Tons.	Milling Width.	Assay Value.
Payable	606,839	43.12	6.56
Unpayable ...	362,507	44.82	3.28

This is practically the same quantity as was available twelve months ago, although the assay value is slightly higher than was estimated then. Although no development worth speaking of was accomplished last year, it will be necessary to carry it on vigorously henceforward, and this will perhaps entail considerable expenditure over and above the ordinary mining charges.

Financing Necessary.

The whole problem it will be seen is essentially a financial one. It was stated in the last circular, that relative to the January output, that there had not been the continuity in the treatment of slimes which was anticipated in the notice to the press in the middle of January, and that only about one-third of the tonnage of slime had been treated. It was not expressly stated on this occasion, however, that the defects in the plant had not been remedied, and we are left to take it for granted, apparently, that the plant is now in fair working order.

People are hinting as to the probability of the concern closing down. It would, perhaps, be a prudent move to make in view of the fact that there is no cash nor cash asset in hand, but as far as we can learn, there is no reason to expect a decision to this effect just immediately at any rate. It must be remembered to the mill has not yet been able to have a fair run, and the suggestion about closing down is, therefore, premature.

Amalgamation has been suggested. It is not impossible that some arrangement of this sort will be come to sooner or later. Kleinfontein would doubtless come in, but there does not seem to be any urgent necessity for it on the part of the latter, and concessions would in any case have to be made by Benoni.

New Heriot.

The accident to the air compressor is not expected to affect returns for next month.

Benoni Consolidated.

The following are the results of operations for the month of January:—45 stamps ran 29 days. Tons milled, 17,000, value to the mill 6.09 dwts., equal to 25s. 6d. per ton; tons treated at cyanide works, 12,017; gold recovered, mill 2,999.7 ozs., cyanide 661.4 ozs.: total, 3,661.1 ounces. Net value recovered (4.307 dwts., equal to 18s. per ton), £15,314; working costs, £17,963; net loss for month, £2,649; capital expenditure, £2,400. The crusher station, mill, tube mills and sands treatment have worked fairly continuously during the month. There was a breakdown in the driving gear of the conveyor belt between the crusher station and mill, which effected the tonnage crushed to the extent of 1,000 tons. There has not been the continuity in the treatment of slime as was anticipated in the notice to press in the middle of January. Only about one-third of the tonnage of slime for the month has been treated.

French Bobs.

The methods of ore reduction adopted by the French Bobs Company have been disappointing. While the oxidised ore has been made to yield fair results it has been found impossible successfully to treat ore full of sulphides. The equipment of stamps, tube mills and filtering tanks is of the most expensive kind, and has proved quite successful on the Rand.

The Virginia.

At Steynsdorp, the Virginia Mine is now working on a fairly large scale, and a further quantity of about 100 tons of new machinery is now on the way to the mine, says the *Eastern Transvaal Mail*. In the old days this mine did well, and if, as is quite possible, it gives good returns under the present management, it may be the commencement of a new era for Steynsdorp. In past years many of the ventures there were closed down by reason of the low percentage of gold produced; it is more than likely that with improved methods of treatment now in vogue, it will pay to resume work.

THE MATTER OF DEVELOPMENT.

The Ore Reserve Increment of 1911—Prospect of Improvement During the Year—The Book-keeping Side of the Problem.

As we pointed out a few weeks ago in a brief review of Rand economics in 1911, one of the first operations to suffer when labour is scarce and big mills must be kept going is the development. Figures quoted by us from the statistical records of the Mines Department for the month of October last went to show that compared with the average of previous years development activity during 1911 had been markedly on the wane. The following figures which include those for December last emphasise this statement still more.

RAND PRODUCING MINES.

Year.	Main Shaft Sinking. Feet.	Main Drives and Crosscuts. Feet.	Other Development. Feet.
1908-1909	2,500	46,775	20,020
1909-1910	2,865	48,745	21,906
1911			
October	2,581	36,729	24,541
December	2,219	35,931	22,670

The falling off is mainly observable in that very important section of development referred to as main drives and crosscuts. It is evident, from an examination of last year's figures, that the ore reserves added in 1911 to the previous total of the Rand's assets of this kind will probably show a distinct falling off in quantity, although not necessarily in quality as compared with the increment of previous years. The trouble is, of course, to be attributed to the scarcity of native labour, and this is a matter which has already been explained so frequently and distinctly to shareholders, that there is little doubt that the fact of diminished reserve assets is one that has long since been discounted in the market.

POSSIBLE INFLUX OF NATIVE LABOUR.

The somewhat long lane of difficulty in connection with the labour supply seems to be approaching a turning, however, for the scanty rainfall of the past few months has probably affected the economic condition of the natives of the Union quite as much as, if not more than that of the white agriculturist. The mealie crop having proved a failure the price of mealies has already begun to rise, and those natives who are able to provide for the evil day have begun to buy food before prices become too prohibitive. A large number are unable to make provision of this kind, and the result is that starvation has already begun to stare them in the face. As a result of this shortage of food-stuffs the labour supply will inevitably be increased to a considerable extent, and it is not unlikely that the cry of unfilled compounds will very shortly cease to be heard in the land.

Those companies who are wise, and who have learnt by experience how detrimental to the industry has been the uncontrolled competition which has followed upon the scarcity of aboriginal labour, will doubtless make use of the more favourable time that is coming to take such steps as are necessary to prevent similar trouble in the future, as far as may be. Among the consequences of an improvement in the labour force will naturally be increased development activity, and we may expect to see a notable increase in the figures relating thereto at no distant date. Following upon this increased development will be an increased quantity of development rock suitable for milling purposes, and this leads us to a consideration of Sir George Farrar's statement in this connection at the recent E.R.P.M. meeting in London.

DEVELOPMENT ROCK IN THE MILL.

In discussing the question of working costs and the reasons for their having gone up at the East Rand Proprietary Mines, he said:—"I will give you the main reasons. Firstly, with the stoppage of excess development, the mine loses a certain amount of development rock costing considerably less than if mined." This was one of the principal reasons, and, judging from the context, the chief reason of the enhancement of working costs. In other words, the increased working costs were to a great extent due to the fact that facilities for making book reductions were not so abundant as usual. It is a sound principle that development should be paid for by that portion of the ore developed by it, which is put through the mill. But when the ore milled is largely comprised of rock taken from the development faces it is obvious that costs are being reduced at the moment with the certainty that the reduction will have to be paid for later on if it has not already been paid for in advance. The principle remains the same whether the quantity of development rock milled be great or small, although the operation may vary considerably in its economic effect according to the proportion of development rock used.

BOOK-KEEPING POSSIBILITIES.

Mr. John A. Dennison, in his discussion of his own paper on "Working Costs on Mines, as Practised on the Rand," had some remarks which bear upon the question. He said that "by merely a slight arrangement or manipulation of the capital accounts, suspense accounts and other items, as well as the calculations of development redemption rates on various lines, it is possible to make working costs appear at almost any figures one likes, and in a perfectly honest way, unless one's ideas were perfectly clear to start with, and the glamour of low working costs did not get hold of one." Development redemption accounts, with all their possibilities for manipulation were, he submitted, very dangerous accounts unless carefully watched to see that calculations were made only on the basis of fully developed and payable ore, with a good margin of safety for the uncertainties of mining.

These remarks have reference to a somewhat wider aspect of the development charges problem than that considered in the matter of the E.R.P.M. working costs, but they are of interest, in view of the circumstance that there seems a possibility of increased development activity during the remainder of the present year.

The use of the term "manipulation" by Mr. Dennison suggests rather more than is intended, perhaps. What may fairly be said, we think, is that the book-keeping methods in use are too rigidly adhered to under conditions in which a modified form would afford a much more simple and accurate statement of things.

The Elmore Vacuum Process.

The report of the Ore Concentration Company controlling the Elmore vacuum concentration process mentions that the 12 unit plant at Sulitelma, Norway, where pyritic tailings are being treated, has been extended to 12 units, and that the 10 unit plant at the British Broken Hill mine is doing good work. In Mexico a mine has increased its plant to 3 units, and two plants have started in Canada. Applications have been filed for new patents which will, it is hoped, extend the use of the process.

Labour Position.

The following labour figures for January are compiled and furnished by the Chamber of Mines:—

Number of natives employed last month by members of the W.N.L.A. and contractors:—

Gold mines	184,046
Coal mines	7,805
Diamond mines	9,524
Total	201,375

RAND MINING AS AN INVESTMENT.

Companies that Yield the Shareholder a Satisfactory Dividend After Allowing for Return of Capital During Life of Mine.

Last year *The Statist* prepared an interesting tabular statement for the purpose of refuting the statement "that there are very few Rand mine shares which, even at the present low prices, give the purchaser a yield of 7 per cent. on his money, and return of his capital outlay by the end of the life of the mine," and in order to make the position rather clearer we gave a table of our own which laid special stress upon the matter of capital redemption. The rate of interest accepted by *The Statist* as a fair one for redemption purposes, 4 per cent., namely, appeared to us rather high, and 3 per cent. was substituted, with the result that several companies that were shown as paying over 7 per cent. interest on the purchase price according to our contemporary's table, appeared on the latter basis to be paying a little less. In the following table the same method of presentation is adopted. The first eight companies are those which were included in last year's statement, and in addition there are several others whose performances have been a source of interest for some time past. The object of the table is to analyse the market apppreciation of the shares in question, and to look at the dividends concerned from the actuarial rather than from the purely speculative standpoint. The figures explain themselves, but that they may be quite clear it may be remarked that the first column gives the making up price on January 9th last, the next represents the 1911 dividend in shillings and decimals, which is sub-divided, in the following two columns, into the amount necessary to redeem the purchase price over the life mentioned, and a balance which is available for the purpose of a dividend. The dividend per cent. which is paid by this balance is given in the next column. With regard to the estimated life a word of warning is necessary. As we have taken occasion to remark times without number, it is impossible for anyone to form a reliably precise estimate with regard to the future life of any mine. In many cases it is impossible to form even a roughly approximate estimate. It is not so difficult, however, to assign a minimum period during which one may confidently expect that operations will continue, and such a minimum period is calculated upon the basis of past experience as to the payable quantity of ore per unit of area, and is corrected by such a factor of safety as seems required by the particular case. In this way the various estimates of the lives of Rand mines which appear in *The Statist* and other responsible financial publications are merely what they distinctly claim to be, carefully made guesses at the truth. The figures we quote are taken from these sources; not that we accept them as absolutely reliable, but because they are of the nature of minimum estimates, and because they are used by the ordinary investor who has no other sources of information.

Redemption Rate.

Since objection has occasionally been made to the use of a rate of interest for redemption, on the grounds that an investor can scarcely be expected to re-invest part of his dividend himself, in order to be sure of getting his capital back, we may explain that interest continues to be paid on the amounts redeemed periodically, and whether these amounts are re-invested or not the sum total of the transaction is that the capital invested is repaid by instalments in due course and interest is duly paid on outstanding balances until the whole sum is redeemed. The formula is one that is commonly used, and it is a very convenient one.

Company.	Price, Jan. 9, 1912.	Dividends per share, 1911.	Dividend Appropriation, Redemption.	Dividend Appropriation, Interest.	Interest on Purchase Price. %	Estimated Life. Years.
	£	s.	s.	s.	%	years.
Crown Mines (10/-) ..	$6\frac{7}{8}$	11·0	1·22	9·78	7·1	50
E.R.P.M.	$3\frac{5}{16}$	6·0	1·09	4·91	7·4	35
Meyer & Charlton ..	$4\frac{1}{8}$	8·0	3·07	4·93	6·0	20
New Heriot	$4\frac{7}{8}$	16·0	6·87	9·13	9·3	12
New Kleinfontein ..	$1\frac{1}{2}$	3·5	·80	2·70	9·0	28
Langlaagte Estate ..	$1\frac{17}{32}$	3·0	·75	2·25	7·3	27
Main Reef West ..	$1\frac{3}{8}$	3·5	·24	3·26	12·0	50
Simmer & Jack ..	$1\frac{3}{8}$	3·5	1·94	1·56	5·7	12
Van Ryn	4	9·0	2·97	6·03	7·5	20
Ferreira Deep	$3\frac{9}{16}$	9·0	5·02	3·98	5·6	12
Geldenhuis Deep ..	$2\frac{3}{16}$	6·0	2·01	3·99	9·1	17
New Modder. (£4) ..	$11\frac{7}{16}$	19·0	7·48	11·52	5·0	22
Nourse Mines	$1\frac{1}{16}$	4·0	·87	3·13	9·2	26
Village Deep	$2\frac{7}{32}$	2·0	1·37	·63	1·4	23

Coming now to the tables themselves, it may be pointed out that with one exception, that of the Meyer and Charlton, the prices of the first eight shares quoted are lower than they were when the question of valuation was discussed in this journal last April. The result is that whereas several companies referred to by *The Statist* were paying less than 7 per cent. dividend on the 3 per cent. redemption basis, the first two are paying rather more. The following is last year's table, and the comparison between the figures and those given above will prove interesting.

Company.	Price Mar. 4, 1911.	Dividends per share. 1910.	Dividend Appropriation. Redemption.	Dividend Appropriation. Interest.	Interest on Purchase Price. %	Estimated Life, Years
	£	s.	s.	s.		
Crown Mines (10s.) ..	$7\frac{5}{8}$	12·0	1·36	10·64	6·97	50
East Rand Proprietary	$4\frac{3}{4}$	8·0	1·56	6·44	6·78	35
Meyer & Charlton ..	$3\frac{13}{16}$	8·0	2·84	5·16	6·76	20
New Heriot	5	16·0	7·05	8·95	8·95	12
New Kleinfontein ..	2	4·5	1·10	3·40	8·05	25
Langlaagte Estate ..	$2\frac{3}{4}$	6·0	1·50	4·50	8·18	25
Main Reef West ..	$2\frac{3}{8}$	5·0	·42	4·58	9·64	50
Simmer & Jack ..	$1\frac{1}{2}$	4·0	2·11	1·89	6·30	12

In the case of the Crown Mines and the E.R.P.M. dividends have been reduced, but the fall in prices has more than balanced this diminution, and, as already remarked, the dividend on the purchase price has now exceeded 7 per cent. At the Meyer and Charlton, on the other hand, the price has advanced, while the dividend has remained stationary, and the investor is getting about ¾ per cent. less for his money. The prospects of the mine are sufficient to account for this appreciation in popular favour. The New Heriot is paying a bigger dividend on a smaller price, and so is the New Kleinfontein, while the Langlaagte Estate, at a lower price, is paying a considerably lower dividend, although we have included the 5 per cent. which was not declared until January last. The Main Reef West price having fallen a sovereign to 1⅜, is giving a much higher return on the price, although dividends were reduced by 7½ per cent. The return is, it will be noted, better than that of any other company in the list, and the obvious deduction to be drawn from the figures is that if the Main Reef Reef West can show prospects of regular dividends of only 17½ per cent. in future the price will tend to increase until the rate of 12 per cent. is reduced to a more ordinary mining figure. We may add, in connection with the life period quoted that it is said by competent observers to represent probably rather a maximum than a minimum estimate. The Simmer and Jack has paid a smaller dividend, and the price has fallen in less proportion, and the effect of this joint movement is that the purchaser is apparently content with a smaller return on his money in the hope of better things.

We now come to a group of companies for which comparative figures are not at the moment available. A feature of the list is the low rate of interest on the January purchase price of three of them, notably the Village Deep. Obviously in the case of the latter future improvements are being abundantly discounted. We may take it that the 5 per cent. rate of the New Modder is an indication of public confidence, particularly in view of the high denomination of the shares. The Nourse Mines, on the contrary, have yet to inspire the public with confidence, because a yield of 9 per cent. is clearly the measure of the risk which the investor considers that he is taking. The same may be said of the Geldenhuis Deep. The Van Ryn dividend represents an approximation to the normal rate expected from mining under fairly reliable conditions, and idicates that the market opinion of the property is a satisfactory one.

THE YEAR 1911 WITH ECKSTEIN MINES.

The following are the complete results for 1911 from some of the leading mines of the Central Mining Group:—

	Ore Milled.	Gold Declared.		Working Profit						Net Revenue from other Sources.						Net Profit.					
							Per Ton.						Per Ton.						Per Ton.		
	Tons.	Ozs.	Dwts. per ton.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
FERREIRA.																					
Totals & Averages	310,300	103,209	6.65	175,322	13	2	0	11	4	27,457	5	9	0	1	9	202,779	18	11	0	13	1
GELDENHUIS DEEP.																					
Totals & Averages	801,860	265,084	6.61	227,577	17	9	0	5	8	13,383	17	0	0	0	4	240,961	14	9	0	6	0
ROBINSON.																					
Totals & Averages	592,700	320,792	10.82	911,133	13	10	1	10	9	17,940	11	6	0	0	7	929,054	5	4	1	11	4
DURBAN ROODEPOORT DEEP.												(Debit.)									
Totals & Averages	262,540	90,916	6.93	60,834	14	6	0	4	8	1,804	4	2	0	0	2	59,030	10	4	0	4	6
ROSE DEEP.												(Debit.)									
Totals & Averages	695,100	231,840	6.67	349,029	19	0	0	10	1	6,154	6	3	0	0	3	342,875	12	9	0	9	10
CITY DEEP.												(Credit.)									
Totals & Averages	349,713	128,113	7.33	130,878	15	1	0	7	6	1,488	14	8	0	0	1	132 367	9	9	0	7	7

Simmer Deep.

The directors' report for the quarter ended December 31, 1911. states: Mine.—Number of feet driven, sunk and risen, 3,180 feet; ore crushed, 146,700 tons; ore developed, estimated at about 167,831 tons (this quarterly estimate of tonnage should not be expected to include all ore fully or partially developed during the period. as blocks of ground may be held over pending fuller information)—excess developed during period, 21,131 tons. Mill and Tube Mills.—During October, 1911, an average of 105 stamps ran 29 days 9 hours 16 mins.; during November, an average of 120 stamps ran 28 days 4 hours 52 mins.; during December an average of 120 stamps ran 28 days 3 hours 30 mins.: total running time, 85 days 17 hours 38 mins; tons crushed. 146.700 tons; tons crushed per stamp per 24 hours, average, 14.897 tons; yield in fine gold, 18.413.747 ozs.; yield per ton crushed in fine gold, 2.510 dwts. Sands Works.—Sands treated (equal to 44.72 per cent. of tonnage milled), 65,609 tons; yield in fine gold, 6,756.406 ozs.; yield per ton treated in fine gold, 2.060: dwts.; yield per ton crushed in fine gold, .921 dwts. Slimes Works.—Slimes treated, 81,091 tons; yield in fine gold, 4,862.183 ozs.; yield per ton treated in fine gold, 1.199 dwts.; yield per ton crushed in fine gold. .663 dwts. Total Yield.—Total yield in fine gold from all sources, 30,032.336 ozs.; total yield per ton crushed in fine gold, 4.094 dwts. Working Expenditure and Revenue.—Working costs, £117,159 18s. 1d. (15s. 11.673d. per ton); profit on working carried down, £8.581 16s. 3d. (1s. 2.039d. per ton); revenue, £125.741 14s. 4d.; interest on debentures, debenture guarantors' remuneration and debenture trustees' fees, £13,595 14s. 8d.; profit tax (estimated), £750—total, £14,345 14s. 3d. estimated loss, £3,798 18s. 2d. Amount spent on plant, buildings, etc., £3.411 1s. 3d.; shaft sinking, £830 0s. 1d., development £9,566 16s. 3d.—total, £13,807 17s. 7d.; less amount for redemption of development charged to working costs as above, £11,400 11s. 3d.—total, £2,407 6s .4d. Note.—No provision is made in this report for redemption of debentures.

Jupiter G.M. Co.

The directors' report for the quarter ended December 31, 1911, states: Mine.—Number of feet driven, sunk and risen, 2,368½ feet: ore crushed, 92,100 tons; less developed, estimated at about 14,652 tons—(this quarterly estimate of tonnage should not be expected to include all ore fully or partially developed during the period, as blocks of ground may be held over pending fuller information)—excess crushed during period, 77,448 tons. Mill and Tube Mills.—During October, 1911, an average of 70 stamps ran 28 days 11 hours 43 mins.; during November, 1911, an average of 65 stamps ran 28 days 1 hour 49 mins.: during December, 1911, an average of 70 stamps ran 28 days 17 hours 43 mins; total running time, 85 days 7 hours 15 mins; tons crushed. 92,100 tons; tons crushed per stamp per 24 hours, average 15.808 tons: yield in fine gold, 12,518.743 ozs.; yield per ton crushed in fine gold. 2.719 dwts. Sands Works.—Sands treated (equal to 11.69 per cent. of tonnage milled). 41,164 tons; yield in fine gold. 5,806.477 ozs.; yield per ton treated in fine gold. 2.821 dwts.; yield per ton crushed in fine gold, 1.261 dwts. Slimes Works. — Slimes treated. 50,936 tons; yield in fine gold. 4,215.612 ozs.; yield per ton treated in fine gold, 1.655 dwts.; yield per ton crushed in fine gold. .915 dwts. Total yield in fine gold from all sources. 22.540.832 ozs.; total yield per ton crushed in fine gold, 4.895 dwts. Working Expenditure and Revenue.—Working costs, £85.045 14s. 11d. (18s. 5.618d. per ton): profit on working carried down, £9,350 4s. 3d. (2s. 0.365d. per ton): revenue, £94,395 19s. 2d.; profit on working brought down, £9,350 4s. 3d; add revenue from rents, interest, etc., £927 11s. 4d.; total profit. £10,277 15s. 7d. The amount spent on capital account during the quarter under review was: On plant, buildings, etc., £22,137 5s. 5d.; shaft sinking, £8,657 6s. 2d.; and on development, £7,817 18s. 1d. Note.—A credit to development of £8,969 3s. 1d. for redemption of development, has been charged to working costs as above.

Mines of the Witwatersrand.

X.—VILLAGE DEEP, LTD.

Improved Results Secured—Reef Dips at a High Angle in the Lowest Workings—Activity in the Turf Mines Section—The Promise of the South Reef.

THERE are several features of interest to be observed in connection with the Village Deep, Ltd. The company is doing much better to-day than it has ever done previously in so far as the all-important consideration of profit is concerned. Then again development work is disclosing encouraging values and widths, a larger percentage of South Reef, which for long proved a disappointing ore body, is being sent to the mill, and furthermore the ore reserves have been augmented. In addition, developments of a very important nature are taking place in the deeper portion of the company's claims, that is to say, in the Turf Mines section of the property. The total mining area of the Village Deep, Ltd., now amounts to 535 claims, including the Turf Mines property lying immediately to the south of the original Village Deep block. To exploit this deep section a large seven-compartment shaft has been sunk to a depth of 4,106 feet, and this intersected the South Reef at a depth of 3,815 feet, in April, 1909. The 18th level is situated at a depth of 4,034 feet from the surface, and the inclines from the two main vertical shafts of the original Village Deep section, have been carried down to the 16th level. The 16th is to be a main haulage level, and preparations are well advanced for the installation of mechanical haulage there.

VILLAGE DEEP, LTD.—GENERAL VIEW OF PROPERTY LOOKING TOWARDS WEST SHAFT.

CONCENTRATION OF WORK IN DEPTH.

It may here be remarked that development of the Main Reef Leader in the Village Deep has been completed down to the 13th level, and although large areas of South Reef remain to be opened up the company will have to look to the large southern areas until recently incorporated in the Turf Mines, Ltd., for future development. Accordingly ore and water will be gradually concentrated at the Turf Mines vertical, and will be hauled and pumped up through this shaft. Large quantities of water from the upper levels of the property are now being allowed to gravitate to the pumping plant at the 18th level, which consists of an efficient installation of Gould 3-throw electric pumps. Exploitation of the deeper areas in the Turf Mines will be effected by means of the main incline and by two development inclines which, for want of a better description may be defined as "glorified winzes." These development inclines will be carried down in the reef so far as possible. The East incline starts from the 17th level, and the west incline from the 18th. It is proposed to open up succeeding levels at distances of 250 feet apart and to adopt the "cone" system of mining as opposed to the "inverted cone" method. The East development incline will accordingly be carried down to the 20th level, and at this point a main mechanical haulage track similar to that at the 16th level, will be adopted. It may here be mentioned that a small amount of development rock is being sent to the mill from the Turf Mines section, and that in this area drives are being put in underneath the Main Reef Leader instead of on it, in order to obtain a greater security of ground.

AN IMPORTANT SHAFT.

The main incline shaft of the Turf Mines, which is 32 feet 6 inches wide, starts just above the 17th level. At present a temporary sinking engine is being utilised; the main electric winder will be installed above and behind this. In order further to facilitate the concentration of work at the bottom of the Turf Mines vertical a large chamber has been cut at the 18th level, and has been almost connected up with the main incline. This is to serve as a main marshalling station for men and tools, etc., and will in fact be an underground reproduction of the collar of an incline starting from outcrop.

Above the 18th Level an ore bin chamber of 2,000 tons capacity has been cut. Having regard to the large stretch of dip ground opened by the Company it is not surprising to learn that the exploitation of ground lying to the south of the bottom of the development inclines—that is to say, below the 21st Level—has already been considered. In the course of the next few years work will be proceeding in the Turf Mines section of the Village Deep, Ltd., at a depth of 7,000 feet or more. Modern underground practice with stage winders seems to have no really important obstacles to content with. In the bottom workings of the Turf Mines the temperature is remarkably mild, and although the small Sirocco fan in this section has not yet been started, the air is by no means unpleasant. Of course, installation of Sirocco fan in the Village Deep (where it was badly needed) has greatly improved ventilation, and there are no reasons for doubting that with the assistance of artificial ventilation, men will be able to labour in the deepest section of the Turf Mines and suffer but little discomfort.

THE "DIP" FACTOR.

Should the angle of dip apparent in the present lowest workings of the Turf Mines be maintained, the most southerly section of the Turf Mines will only be attacked at an enormous depth. It is a highly important and seemingly little recognised fact that in the lowest workings of the Turf Mines (and thus in the deepest section of the Central Witwatersrand) the formation has steepened considerably.

The main incline from the 17th Level has been commenced at a dip of 41 degs., and in the lowest workings in the mine the formation inclines at an angle approximating to 40 degs. These disclosures are of the very foremost importance, not only to the Village Deep Company, but to the Central Rand generally. The high angle of inclination may of course, be due to proximity to some large stratigraphical disturbance, which has yet to be exposed, but up to the present signs of such disturbance are lacking. It is true that on the 18th Level a dyke may be seen lying between the Main Reef Leader and Main Reef, but this interbedded body has been determined to be conformable over a fair stretch of development, and exerts no disturbing influence on the strata. The high dip evident in the lower workings of the Turf Mines will, of course, have an important tendency towards reduction of lashing costs, and it also means an increased tonnage per claim.

THE ORE RESERVES.

In regard to the Village Deep as a whole a large amount of development has been achieved, and the ore reserves at the end of 1911 amounted to approximately 2,000,000 tons, of which 485,000 tons were in respect of South Reef. The average value is just over six dwts. per ton, and the stope widths are placed at 62 inches for the Main Reef Leader and 50 inches for the South Reef. As compared with the position obtaining at the end of 1910, it may be remarked that widths and values are about the same, but a fair increase has been attained in tonnage. It must be borne in mind, too, that a considerable tonnage has been developed, but not valued, so that in reality the Village Deep is to-day in a much better position as regards ore reserves than twelve months ago. In regard to mining it is important to note that 15 per cent. of the ore drawn last year came from the South Reef, as compared with 7½ per cent. in the preceding twelve months. The fact that better developments are now being obtained on this body in the Western section is of great importance. In other parts of the mine this reef is practically undeveloped. South Reef ore reserves at the end of 1911 were getting on for double those recorded at the end of 1910. The full labour complement of the Village Deep based on an all hammer boy policy is 6,000, but not 4,000 are at present registered in the books of the Company. Full advantage has accordingly been taken of machine drilling, and ninety per cent. of the ore broken in the mine to-day is derived from this source.

MUCH IMPROVED RETURNS.

Although the Village Deep Gold Mining Company has recorded a progressive increase in profits since the commencement of reduction operations, it is only during the past few months that the mine has given a real indication of its profit earning possibilities. In the first year of productivity, twelve months ending December, 1905, the Village Deep earned a profit of £43,788 from 159,687 tons milled. In the following twelve months ore crushed and profits earned were almost doubled. During the year ending December, 1907, the Company crushed 281,380 tons, and earned £76,651.

Results secured during the next three years were:—

	Tons Milled.	Working Profit.	Per Ton Milled
1908 ...	352,100	£128,709	7s. 3.731d.
1909 ...	444,800	146,634	6s. 7.119d.
1910 ...	507,800	154,067	6s. 0.816d.

Last year the Company eclipsed all previous achievements, as the following table sets forth.

The profit per ton earned in respect of the 1911 operations was 8s., as compared with 6s. 1d. in 1910 ,and as is shown in the above tabulated statement, the Company crushed over 60,000 tons more last year than in 1910, and secured a profit greater by over £70,000.

THE REDUCTION AND TREATMENT PLANT.

The Village Deep possesses an efficient and modern reduction and treatment plant, consisting of 180 stamps and 6 tube mills. These were employed throughout last year and they crushed 569,500 tons, or 61,700 tons more than in 1910. In connection with the metallurgical equipment of the Company it will be of interest to state that a Hardinge mill is being erected, and is now practically ready for use, and that a Trent agitator has been employed in the Cyanide Works for some little while past.

AS TO FINANCES.

At the last annual meeting Mr. H. C. Boyd, who presided, remarked of the 1910 operations—"The total profit for the year amounted to £160,172 7s. 2d., after adding to the above working profit the amount received in interest, freehold revenue, etc., and deducting therefrom expenditure including £656, which represented the contribution of the Company toward the cost of the Sanatorium for miners suffering from phthisis. Adding to this profit the balance carried forward from the last Accounts, we had an undistributed profit of £302,567 1s. 4d. to deal with, which was applied to meeting the expenditure on capital account of £131,648, the Government profits tax, and the dividend of ten per cent. for the year, and left a balance to be carried forward of £55,738 2s. 5d."

The following figures as to the 1911 operations may be of interest in that they enable one approximately to determine the financial position at the end of the year. We write "approximately" because of course they are subject to additions accruing through "revenue from other sources," etc., and to general adjustments in making up the annual balance-sheet:—

Working profit	£227,375 11 3
Dividends declared (No. 6 five per cent., No. 7 five per cent.)	106,607 0 0
Capital expenditure.	
March quarter	21,858 0 10
June quarter	16,453 10 3
September quarter	40,042 13 7
December quarter	12,243 18 5

These expenditures on capital account are exclusive of the proportion of an annuity of £5,172 payable to the Government in respect of mining rights acquired under an area of 7.3701 claims.

Tax on profits due to Government.	
March quarter	£3,307 0 0
June quarter	7,667 0 0
September quarter	3,729 0 0
December quarter	7,133 0 0

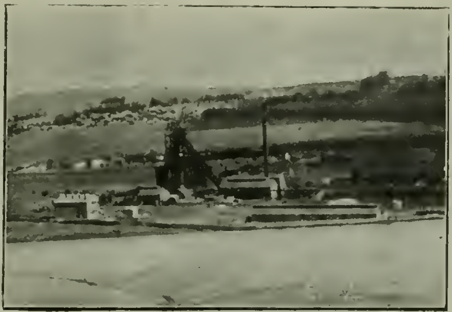
Gold reserve at end of 1911 ... ... 5,600 ozs. fine gold.

PERIOD.	GOLD DECLARED			WORKING PROFIT.		NET REVENUE from other SOURCES.		NET PROFIT.	
	Ore Milled Tons.	Ozs. Fine.	Yield per Ton Milled. Dwts. Fine	Profit. £ s. d	Profit per Ton of Ore Milled. £ s. d.	Amount. £ s. d.	Amount per Ton of Ore Milled. £ s. d.	Total. £ s. d	Total Profit per Ton of Ore Milled. £ s. d
1st quarter ending 31st March, 1911 ...	134,900	40,667	6.03	44.115 15 8	0 6 6	477 9 4	0 0 1	44,593 5 0	0 6 7
2nd quarter ending 30th June, 1911 ...	140,000	43,467	6.21	53.730 11 10	0 7 8	649 11 5	0 0 1	54.380 3 3	0 7 9
3rd quarter ending 30th September, 1911	148,000	47,387	6.40	61,287 18 0	0 8 3	(Debit.) 855 10 4	0 0 1	60,432 7 8	0 8 2
4th quarter ending 31st December, 1911	146.600	48,764	6.65	66.645 13 9	0 9 1	1,324 1 7	0 0 2	67,969 15 4	0 9 3
Totals and averages	569,500	180,285	6.33	225,779 19 3	0 7 11	1,595 12 0	0 0 1	227,375 11 3	0 8 0

The General Outlook for the Company.

The general prospects of the Company appear to be good. The Village Deep Mine is in an advanced state of development, in so far as the Main Reef Leader is concerned, and the much better results secured of late on the South Reef encourage one in the belief that this ore body, which for long proved a disappointment to the Company, will after all prove a most valuable asset. As regards the Turf Mines area the development carried out underground to date has proved satisfactory; ventilation conditions are good, and the steepening of the reef formation will have a beneficial influence on working costs. This section is designed to supply a very large tonnage, and that it will do so for a considerable number of years is not open to much serious doubt. Not only will the high angle of dip in the lowest workings of the Turf Mines make for cheaper mining costs than have been generally anticipated, but this stratigraphical feature must also have an important influence on "life." It would at the present time be premature to advance estimates in this regard. We prefer to wait further developments in depth, especially with reference to the important question of dip before venturing any calculations (however subject to qualifications) on this score. We may, however, with every degree of confidence, make the assertion that there are sound reasons for believing that the Southern Sections of the Village Deep will provide a tonnage of profitable ore substantially in excess of that denoted in estimates hitherto advanced.

Village Deep, Ltd.—The East Shaft.



The Turf Mines Shaft.

Rooiberg Minerals Development Co.

The report for the quarter ended 31st December, 1911, states:—10 Stamps ran 87·375 days, crushing 4,687 tons (2,000 lbs.) of ore, the duty per stamp per 24 hours being 5.36 short tons. The output for the quarter amounted to 195·694 tons (2,240 lbs.) of concentrates. The estimated profit for the quarter was £10,848 17s. 1d., excluding mining taxation, made up as follows:—Estimated profit for October operations, £3,129 14s. 8d.; November, £3,353 13s. 8d.; December, £2,690 19s. 4d.; total for three months, £9,174 7s. 8d. Profit declared for October, £3,500 14s. 8d.; November, £4,274 10s. 7d.; December, £3,073 11s. 10d.; total for three months, £10,847 17s. 1d. The concentrates in reserve at 31st December, 1911, amounted to 23.33 long tons of a net value of £2,174. The total tonnage of accumulated partly treated product, to which reference was made in the last annual report, now amounts to approximately 37,522 tons of an average assay value of 2·57 per cent. metallic tin. During the quarter the native labour complement has improved considerably, permitting of an extension of the programme of development and exploration. The Pyritic Lode West, 110 feet level, which is now connected with the Union North Lode, has continued to expose ore of a satisfactory grade over a distance of about ninety feet. A winze is being sunk on this lode, which is now down thirty-five feet, carrying ore of a satisfactory grade practically all the way. No. 1 Shaft has been sunk twenty-one feet; the total depth being 367 feet at 31st December, 1911. Sinking No. 3 Main Shaft, situated at the East End Old Workings, has been continued, and is down 54 feet. Stoping continues to disclose, in supplementary fillings off the Main Lode channels, ore of average grade. Exploratory work has been carried on principally at the East End Old Workings and at the South End Workings, where ancient excavations have also been encountered and tin-bearing fissures discovered which are now being explored. Recent rainfalls have filled the new dam. The No. 6 Borehole has been equipped with the necessary machinery, and is in commission. The erection of the various units of the new plant is making steady progress. The Power Plant, Crusher Station, and Compressor are nearing completion. The erection of the new Mill and Concentrating Plant is well forward. An interim dividend of 7½ per cent. (equal to 1s. 6d. per share) has been declared, payable to all shareholders registered in the books of the company on the 30th December, 1911. Warrants in payment of this dividend will be despatched to shareholders from the head and London offices on the 31st January, 1912. The amount absorbed is £13,500. The net expenditure for the quarter on capital account was as follows:—Shafts, development and exploration, £1,929 12s. 2d.; machinery and plant, £21,401 7s. 4d.; total, £23,330 19s. 6d.

Piggs Peak Development Co.

During the month of January the mill at Pigg's Peak ran 29 days, crushing 2,655 tons. Fine gold recovered from mill 705 ozs.; sands and slimes treated, 2,581 tons; yield in fine gold, 326 ozs.; total fine gold, 1,031 ozs.; total value, £4,327; working costs, £2,156; profit, £2.171. Working expenses, including development, 16s. 2d. per ton. During the past month 448 tons of the ore from the new section mine were crushed, yielding 2¾ tons of concentrates, value £197, and these are included in the month's tonnage and value of the gold won. The increased supply of native labour permitted largely increased development, as well as a considerable increase in the quantity of ore broken in the stopes, costs of which are included in working expenses.

Sabie Activity.

Record outputs for the last month are reported from the Sandstone Reef, the Rex G.M. Syndicate producing nearly £2,500, and the Jollie Bright Syndicate totalling £800. The Conberis Syndicate and the Buchanan Syndicate also did well.

LONDON DIAMONDS.

Opinions of an Experienced Digger—A Brief but Interesting Interview.

Bloemhof Diamond Diggings still continue to engage a great deal of local attention. Not only in Johannesburg but throughout the Union of South Africa, and even in Rhodesia is information regarding Mooifontein, London, and the diggings nearer the town of Bloemhof continually being asked for. Diggers who are visiting Johannesburg are often able to give interesting information regarding these fields, and during the week we seized the opportunity of interrogating Mr. Numa D. Davis on the subject of London. Mr. Davis, as the majority of the older inhabitants of this town are doubtless aware, is an experienced digger, and his views are at least entitled to receive some consideration. Mr. Davis has been digging on London for some weeks past.

"What do you think of London?" we asked Mr. Davis.

"I regard it as a proposition full of possibilities," he replied. "Mind you, it requires judicious working, and a man must have a little capital if he is to do any good there. In my opinion, the man who arrives on London with his equipment and a little money for emergencies should do well, provided he is prepared to work and employ common sense."

"How many diggers are there on London at present ?" we queried.

"Between 70 and 80, I should estimate," said Mr. Davis. "Unfortunately, a number of poor families have come recently; they are possessed of no means and are not the type of people who are calculated to secure the best results. However, more diggers of a useful stamp are coming in."

"London," continued Mr. Davis, "is covered with diamondiferous gravel. I do not think that the company reserved the best portion, and I myself intend operating on a section of the farm other than that which has been worked up to the present."

"The proclamation of Mooifontein may have been a little premature and the company might perhaps have carried out more prospecting work on it before proclaiming its value to the public in such very high-falutin terms (terms which smacked rather of a circus advertisement than a genuine mining proposition), but I am convinced that there are vast stretches of good, payable ground on the property."

"What results have you secured ?" we asked.

"Well, I might have been more fortunate, but as it is, I have found diamonds which sold for close on £60 from about 60 loads washed. The quality of the diamonds leaves little to be desired. Some really splendid stones have been discovered, and the average is very good indeed."

"Now, as to water and native labour ?"

"Well, boys are coming in freely; we have been paying them fifteen shillings a week and food, but these rates are about to be reduced. As to water, there is an abundance on the farm. The digger's trouble lies not in scarcity of water, but in the cost of transporting water to his claims. However, a man many secure his own water supply by sinking a shallow well. At fifteen or twenty feet large quantities of water are to be encountered almost anywhere."

In concluding the brief interview, Mr. Davis remarked that he, at any rate, was satisfied with London, and that he was returning there to engage in digging and washing on a much larger scale than hitherto.

Kromellenboog Diamond Co.

A copy of the prospectus of the Kromellenboog Diamond Company, Limited, to be registered under the Limited Liability Laws of the Orange Free State, has reached us. The capital is £15,000, divided into 15,000 ordinary shares of £1 each. Of these shares 10,000 are to be issued and credited as fully paid up, and the remaining shares are now offered for subscription at par, payable in full on application. The minimum subscription on which the directors will proceed to allotment is 3,500 shares. The directors are Messrs. D. Starfield, W. Bleloch, Capt. A. J. Crosby, and two gentlemen to be appointed by the registered owner of the mineral rights when the company is registered. The company is formed to acquire, among other things, the mineral rights over a portion of the Farm Kromellenboog No. 108, District Bloemhof, in extent 2,181 morgen and 516 square roods, as held by one Moritz Back under a notarial cession dated the 20th day of August, 1907, with a view to working a portion of the land and winning the diamonds contained therein, and dividing the remainder into claims and disposing of such claims to the public. The property has been reported on by Mr. J. S. de Villiers, who has had over twenty years experience as an alluvial diamond mining engineer and manager; Mr. T. L. H. Shone, a geologist who reported on the alluvial diamond fields, Borneo, for a large Dutch company, and Mr. Jerry Davies, a well-known diamond expert. Extracts from the reports of these gentlemen are attached, and the full reports may be inspected at the office of the secretary of the company. In his report, Mr. J. S. de Villiers makes the following statements:—

> "On the farm there occur large deposits of diamondiferous gravel. One area was worked some years ago and produced over £100,000 of diamonds. The ground now dealt with adjoins this area and has gravel of the same type to a great extent. The diamonds found on Kromellenboog are of an exceptionally high value and in average price would be higher than anything found in South Africa. This is accounted for by the extraordinary pure quality and the very large percentage of big diamonds found on the small areas already tested. You have a very large area of workable gravel, the richness of which I hold has already been proved by the small area which is practically in the centre of it. I feel confident that your property will far and away outclass any similar proposition in the Bloemhof District."

Mr. Shone states:—

> "I like the eastern side of the Leegte, opposite to the old kopje, for alluvial, and am of opinion that it will pay well."

and Mr. Jerry Davies states:—

> "The centre portion of this farm was prospected by myself in the year 1897-1898, and thrown open to alluvial diggers. In the small patch of ground then thrown open the diamonds were very plentiful and the ground easy to treat, either through a gravitator or rotary machine, as much as £5,000 of diamonds coming out of a single claim, 30 feet by 30 feet."

Messina January Operations.

The mill ran 12.8 days, treating 754 tons of ore, and producing 107.66 tons of concentrates containing 51.8 per cent. copper, and also 67 tons middlings, assay value 13.3 per cent. copper. Only ore obtained from development work was treated. The total footage was 425 feet. Development continues to show satisfactory values in the various levels and in winzes. Erection of air compressor has been completed, and 6 machine drills have been started. Native labour is still very scarce.

The River Diggings.

For the month of January, finds of diamonds at the Goedgenoeg diggings were declared to amount to 50¼ carats, valued at £326. One stone of 7½ carats was valued at £70, one of 4¾ carats at £50, and another of 2½ carats at £35. Prospecting has now ceased on the farm Weltevreden, and arrangements are being made for its being proclaimed for pegging. A Government surveyor has been at work during the past week, and it is expected that proclamation will take place as soon as his survey diagrams have been forwarded to the Government. During the period of prospectors were at work (November 23 to January 27), the finds amounted to 393¼ carts, and were sold for £1,956.

STAGNATION IN RAND MINING METHODS.

How to Lessen Accidents and Costs—A Strong Criticism of Present Day Underground Practice—Closer Supervision and Specialisation in all Departments Advocated.

[By William Blane.]

There has been considerable discussion lately in engineering circles regarding the extraordinary high accident rate prevailing on the mines on the Rand. It has generally been allowed that the number of deaths by accident on these fields is appalling when compared with that of any other mining centre in the world. And this despite favourable conditions, for no one has ever contended that the ground is of an exceptionally treacherous kind, and there is almost an entire absence of dangerous gases. If to the 915 killed and 1,677 injured yearly by accident could be added the number of those (natives and whites) who leave every year to die unheard of, from phthisis alone, probably even the callous shareholder would awake to the fact that his dividends are human lives. And, but for a comparatively negligible percentage, all this annihilation of life takes place underground.

A Valuable Paper.

The thanks of humanity are due to Mr. J. Chilton for his recent paper on this subject, read before the Chemical and Metallurgical Society. Healthy discussion followed the reading of this paper, and many helpful points were brought forward, but the great danger is that the matter will end in academic interest, and nothing practical be done to improve the position. To avoid this, if possible, is the object of the writer.

No Change in 20 Years.

The stupidity of the native and his strangeness to the work are doubtless contributors to the high accident rate, but the lack of constant and efficient technical supervision is the greatest factor. In this respect let the surface works be compared with those underground, and the position will be apparent. Not only in the matter of accidents is the difference seen, but also, and in an accentuated form, in that of working costs. It is acknowledged that technical supervision, skill and specialisation have resulted in reducing surface costs to a minimum, while the accident rate gets proportionately less. Compare the surface works of to-day with those of twenty years ago, and the change effected is so great as to amount almost to a revolution in working methods. But the mine of to-day and the underground methods of to-day are almost identical with those of twenty years ago. The accident rate is astounding, and working costs unjustifiable. A man who managed mines here twenty years ago might walk through the mine to-day without being struck with any appreciable change, except perhaps that there are more rock drills at work, and a shaking shoot fixed up here and there to facilitate the passage of the rock to the boxes. The methods are the same. And the staff is the same—the manager, the mine captain and the shift boss—excepting that the experienced manager, with direct responsibility, is in most cases replaced by one who carries out the instructions of a consulting engineer. The "mining engineer" is everywhere in evidence except in the mines. He pays them short and occasional visits; but he does not work there. This is the evil. The place for the mechanical engineer is in the workshop—his office is there, and his whole time spent there, with the result that every man under him knows his business and all work is specialised, and carried out with a minimum of risk and expense. Why should not this principle be applied to the mines? Every man on the surface goes to his work to do his own part, and must do it to fit in with the whole, for close technical supervision makes this essential. Underground, men must make a living as best they can, and they are hustled to anything by anybody. The mine captain is after the shift boss, the shift boss on the heels of the miner, and the miner on the track of the Kaffir, but *the scientific man is absent*. The toll is inefficiency, excessive costs, and three lives a day.

Two Reforms Advocated.

Specialising, with close technical supervision, should be as possible underground as on the surface, and should have even more beneficial results. Once get the mining engineer to *work* in the mine, and lay out *all* work in a skilful and orderly manner, making every man a specialist, and the accident rate and working costs would soon be diminishing quantities. Labour-saving appliances would be thought out by him on the spot, and order would prevent the confusion which leads to most accidents. Let the manager of the mine have his office in the mine, give him a section small enough to allow of his being in close touch with every man in it, and make him directly responsible. Let his first business be to make every white man a specialist. A rock drill man should attend only to drilling holes, and need not even know where they should be put in or how to charge them. The miner should mark all holes and indicate their direction, the same way as the fitter centre-punches the plate or casting for the drilling machinist. Time is money even in a mine, and one has only to look at the diagram of any air-compressor to see that only for a few hours in a day is the maximum of air consumed. Everyone knows that this is owing to the waste of time while the rock-drill man is "bossing up" shovel boys, or attending to some other work which could as well be done by some other person. A compressor need not hang on its centres an hour if it is so arranged that the drill man goes down to drill only, and finds his stope clear and his holes marked ready to begin. The same applies to other things, such as shovelling, tramming, blasting, etc. A few more faces, and insistance on every man doing his own part and keeping out of the way of the others, would soon reduce chaos to order and ensure a degree of safety and a cost figure unknown to-day. But this demands the responsible engineer on the spot, and with no more on hand than he can keep well under control.

Discussion Wanted.

Mr. Webber, the Chairman of the Chamber of Mines, said the other day, at the opening of the Mining Exhibition, that what they wanted was an expert in every mine to pick the brains of every worker in order to produce life and labour saving appliances. Every man agrees with him, and it is with the object of exciting discussion on the subject that this article is written. It is not pretended to solve the whole difficulty by a few columns of print. There are many obstacles, and probably not a few objections to the course indicated, and these may be safely left to others to produce.

The Ideal.

Blasting every day in the same stope is a fruitful source of disease and accident, as well as the cause of much loss of time. This need not be, and it is conceivable that a mine could be so well and orderly arranged that blasting need only take place on Saturdays, giving the whole of Sunday to let the dust settle and have the roof examined. This may be more ideal than practical, but it would pay in the end. The getting ready for blasting, and the daily clearing of the face accounts for no inconsiderable part of the shift, while it keeps dust and roof in continual agitation. Let it be tried, if in a modified form, at some representative mine. There may be difficulty in keeping the mill going at first, but some sacrifice is necessary in all reform, and surely the prevailing system has enough to answer for! The present chronic condition of hustle in mines is out of all keeping with the progress of the age, and the contrast between its results and those of system and close expert supervision on the surface is too marked to permit of further emphasis.

Centralisation and nebulous control by deputy and telephone have had a good innings, let specialisation and close supervision have a trial. One immediate result of the mining engineer having to live in the mines would be that, to preserve his own life, he would make general conditions less deadly than they are to-day. His compulsory presence underground for eight hours a day would do more for the prevention of accidents and miners' phthisis than a dozen commissions, and, incidentally, would reduce working costs to a point which would allow of a profit being made on further enormous bodies of lower grade ore.

Goerz Group.

The following results of operations on the mines of the Goerz Group for the three months ended 31st December are taken from the quarterly reports which have now been issued.

LANCASTER WEST.

Number of tons milled, 67,050; gold recovered, 16,125.189 ozs.; revenue from gold, £72,492; working expenses, £65,132; working expenses per ton milled, 19s. 5.136d.; working profit per ton milled, 2s. 2.343d.; working profit for quarter, £7,359; sundry revenue, £2,062; debenture and interest charges, £2,025; balance profit for quarter, expenditure and revenue account, including capital expenditure, £1,215. Mine development.—Botha section, 516 ft.; Battery section, 3,582 ft.; total, 4,098 ft. The ore, based on the milling width, developed by the above footage, is: Tons developed, Botha section, 13,662; Battery section, 143,276; totals, 156,938; tons payable, Botha section, 10,087; Battery section, 60,119; totals, 70,206. The footage driven, risen and sunk on the Battery section and sampled totalled 2,609 ft., averaging 6.41 dwts. over 37.85 inches, and on the Botha section 355 feet, averaging 10.34 dwts. over 30.73 inches. These figures are subject to recalculation at the end of the year, when block values are made out.

PRINCESS ESTATE.

Number of tons milled, 33,628; gold recovered, 9,634.227 ozs.; revenue from gold, £40,693; working expenses, £46,943; working expenses per ton milled, 27s. 11.034d.; working loss per ton milled, 3s. 8.613d.; working loss per quarter, £625; sundry revenue, £1,025; debenture and interest charges, £269; balance debit of expenditure and revenue account, including capital expenditure, £38,542. In addition to above, the following amounts were expended during the quarter in connection with the dewatering of mine workings, shaft sinking and repairs, and repairs to plant on the properties acquired: On property acquired from Roodepoort Central Deep, Ltd., £9,674 2s. 6d.; on property acquired from West Roodepoort Deep, Ltd., £4,427 18s. 10d.; on property acquired from Norman Properties Syndicate, Ltd., £1,990 12s. 3d.; total, £16,092 13s. 7d. The footage driven, risen and sunk on the reef and sampled was as follows: South Reef, 435 feet, averaging 5.8 dwts. over 24 inches; Main Reef, 665 feet, averaging 4.2 dwts. over 41.2 inches. It is estimated that the payable ore, based on the milling width, developed by the above footage is: South Reef, 6,300 tons; Main Reef, 10,489 tons; total, 16,789 tons. These figures are subject to recalculation at the end of the year when block values are made out. The remodelling of the plant and the change over to the new plant, which was only completed in December, seriously interfered with the operations, while the absorption of gold in the tube mills, plates, and furnaces which always obtains in starting a new plant has not ceased yet, though now on a much reduced scale. A fall in yield, which it is expected is only temporary, has had to be faced. The greatest difficulty has been experienced through lack of native labour. During the period of shaft repairs the labour force had unavoidably become dislocated, but it is hoped that the necessary labour supply will be obtained shortly to enable an adequate tonnage to be treated.

MAY CONSOLIDATED.

Number of tons milled, 46,630; gold recovered, 13,856.371 ozs.; revenue from gold, £58,820; working expenses, £31,960; working expenses per ton milled, 13s. 8.497d.; working profit per ton milled, 11s. 6.246d.; working profit for quarter, £26,859; sundry revenue, £924; balance profit for the quarter, £27,783.

GEDULD.

Number of tons milled, 38,550; gold recovered, 12,321.383 ozs.; revenue from gold, £52,175; working expenses, £42,487; working expenses per ton milled, 22s. 0.51d.; working profit per ton milled, 5s. 0.317d.; working profit for quarter, £9,688; sundry revenue, £1,340; balance debt of expenditure and revenue account, including capital account for quarter, £7,716. Mine development accounts for 3,285.5 feet. For the three months ended 31st of December, 1911, the footage sampled on the reef totalled 2,721 feet, the assay values of which are as follows: No. 2 shaft: North raise No. 3, 295ft. sampled 5.4 dwts over 35.2 ins.; north raise No. 4, 260ft. sampled 8.6 dwts. over 13.4 ins.; "A" level south from north raise No. 3, 45ft. sampled 6.5 dwts. over 24.7 ins.; raise from "A" level, 95ft. sampled 32.1 dwts. over 26.2ins.; "B" level north from north raise No. 2, 225ft. sampled 42.9 dwts. over 11.1ins.; "B" level south from north raise No. 2, 230ft. sampled 4.3 dwts. over 31.6ins.; south deviation drive, 20ft. sampled 7.5 dwts. over 31.2ins.; south raise No. 3, 265ft. sampled 9.5 dwts. over 28.6ins.; south raise No. 4, 121ft. sampled 11.1 dwts. over 37.4 ins.; No. 2 incline shaft, 45ft. sampled 21.5 dwts. over 13.3ins.; No. 1 north incline, 60ft. sampled 3.9 dwts. over 25ins.; No. 1 level north, 15ft. sampled 3.6 dwts. over 31.3ins.; No. 1 level south, 15ft. sampled 2.7 dwts. over 32 ins.; No. 2 level north, 385ft. sampled 37.7 dwts. over 19.6ins.; No. 2 level south, 355ft. sampled 27.5 dwts. over 22.8ins. No. 3 shaft: East drive, 155ft. sampled 19.5 dwts. over 24.5 ins.; west drive, 40ft. sampled 3.6 dwts. over 19.5ins.; west raise, 95ft. sampled 2.2 dwts. over 10.6ins.

Mining Questions in the Union Parliament.

MINERS' PHTHISIS COMMISSION.

Mr. Creswell (Jeppes) asked the Minister of Mines: (1) Whether any interim report had been received from the Miners' Phthisis Medical Commission; (2) if not, whether any request had been made by the Government to be furnished with an interim report; (3) whether any intimation had been received by the Government as to when the report of the Commission might be expected?

The Minister of Mines answered the first part of the question in the negative. The answer to the rest of the question was that the report of the Commission had just been received, and would be laid on the Table of the House as soon as possible.

CROWN MINES SHIFT BOSSES.

Mr. Creswell (Jeppes) asked the Minister of Mines: (1) How many persons are now employed as shift bosses on the Crown Mines (a) on day shift and (b) on night shift; (2) how many persons were returned by the Crown Mines under the heading of "shift bosses" in the last returns sent in by that company to the Mines Department; and (3) what was the date of such return.

The Minister of Mines said the reply to the first part of the question was that 21 shift bosses were employed on day shift and 13 on night shift. In answer to the second part, Mr. Malan said that in the last returns sent in by the company it was shown that 27 shift bosses were employed from December, 1911, this being an average figure. The answer to the third part of the question was the 24th of January, 1912, being the usual quarterly report.

Sir Lionel Phillips (Yeoville) asked whether, as a matter of principle, the information required in the first part of the question was such as should be given in public. It seemed to him to be inquisitorial, and trenching on the private affairs of the company. The Speaker ruled that the question was quite in order.

East Rand Proprietary Mines.

FRENCH REPRESENTATION ON DIRECTORATE.

A Reuter's cable says French shareholders are sending M. Renaud (engineer) to the meeting of the East Rand Proprietary Mines to be held at Johannesburg, with full powers. He will submit a resolution that the Board should include three French representatives if the Board consists of over eight members, and two French representatives if the Board does not exceed seven members. The resolution will further propose that one French director should have a seat on the Finance Committee.

MINING EXAMINATIONS.

Private individual tuition for Mine Managers', Mine Captains', Mine Surveyors', Mechanical Engineers' and Enginedrivers' Examinations, Practical Mathematics and Electrotechnics. Correspondence lessons where personal tuition is impossible.—E. J. MOYNIHAN, Consulting Engineer, 10, Anglo-Austrian Buildings, Box 2061, Johannesburg.

THE GEOLOGY OF THE RAND.

A Spirited Criticism of Dr. Mellor's Views—The Last Word not yet Said on the Subject—Some Important Points at Issue.

[By C. Baring Horwood.]

The discussion on Dr. E. T. Mellor's paper on "The Normal Section of the Lower Witwatersrand System" has drawn forth the following paper by Mr. C. Baring Horwood, which was read at the last meeting of the Geological Society of South Africa.

Before discussing Dr. Mellor's excellent and very instructive paper on "The Normal Section of the Lower Witwatersrand System," the writer would like, first of all, to state that no one could appreciate more highly than he does the work which has been, and is being, done by the members of the Transvaal Geological Survey. The following criticisms are made only with a desire to arrive at the true interpretation of the geological record of the Witwatersrand; and he feels sure that the members of the Geological Survey would be the last to look upon such criticisms as a personal matter, directed against them; or to suggest that owing to their official position they are less liable than others to occasional error. Dr. Mellor, himself, says: "No one more than the members of the Survey will welcome discussion on the many debatable points still remaining in Rand geology, for in such a complicated area it is almost impossible for any individual to become acquainted with all the details."[1] As Bacon has well said. "Certain it is, that whosoever hath his mind fraught with many thoughts, his wits and understanding do clarify and break up, in the communicating and discoursing with another; he tosseth his thoughts more easily—he marshalleth them more orderly—he seeth how they look when they are turned into words—finally, he waxeth wiser than himself; and that more by an hour's discourse than by a day's meditation."[2] If Dr. Mellor's paper go now unchallenged it would be a very difficult matter in future for anyone to dispute the theories therein advanced, backed up as they are by the official prestige of the Government Survey. One of the main reasons, therefore, for bringing forward this discussion is to prevent it being inferred that the last word has been said about so important a subject; or that its many difficulties have been finally solved. For the purposes of this paper it has been found necessary to deal at the same time with Dr. Mellor's previous paper, read in March, 1910, on some "Structural Features of the Witwatersrand System on the Central Rand"[3] (especially as he makes frequent reference to it in his present paper); and also with his monograph entitled "The Geology of a Portion of the Central Witwatersrand."[4] When the first of these papers was read, the writer was away in Europe and was unable at the time to take part in the discussion; also, the matter contained in the three papers deals so intimately, and to such a large extent, with one and the same subject and the papers so overlap each other that it is difficult to enter into a broad criticism on the general principles involved without including all three papers together.

In addition to the reading adopted by the Survey, there is another possible reading of the geological record of the Bezuidenhout Valley and Rietfontein areas as disclosed by Dr. Mellor's very careful and detailed mapping of the lower Witwatersrand beds extending from Witkopje No. 157 to beyond Waterval No. 79; and, by the work done by numerous geologists and private observers during a long number of years, whose work covers a much wider area, comprising the whole Rand extending from Modderfontein No. 46 and Palmietkuil No. 69, on the far East Rand, to Gemsbokfontein No. 32, on the far south-western corner of the Rand. This alternative interpretation seems to agree more readily with all the observed facts (including Dr. Mellor's own mapping) without necessitating the assumption of so many and great faults as are required if Dr. Mellor's present reading be accepted.

General Review of Dr. Mellor's three Papers.—Before dealing with this matter it might be as well to first briefly review in a general way some of the more important matters of interest in these papers.

In the introduction to the paper on the "Normal Section of the Lower Witwatersrand System," Dr. Mellor states that perhaps one of the most outstanding problems in connection with the Witwatersrand System is that of the correlation of the many diverse sections which are represented by the central and western portions of the Rand. It is hoped in what follows that this correlation may be greatly simplified. The great difference not only in the apparent succession of the strata, but also in the thickness of individual groups of beds, and of sections as a whole, in what have been considered representative sections, is accounted for by Dr. Mellor as being *mainly* due to the existence of very severe and extensive faulting chiefly due to longitudinal, or strike, faults rather than to any original conditions of deposition, the effects of which are, apparently, largely discounted by him.

In the past sections have been taken across the Witwatersrand System without, as a rule, any attempt to follow the individual horizons over any appreciable distances along their strike; and, it is mainly owing to the very careful and detailed mapping of these horizons by the Survey that very great modifications of the normal section, produced by faulting on a large scale, especially by strike faults, have been disclosed. Dr. Mellor states that he has followed the course of the main strike fault for a distance of over 20 miles from the middle of the farm Rietfontein No. 145, to beyond Maraisburg. This discovery has added very greatly to our knowledge and to a more intelligent interpretation of facts than has heretofore been possible. However, in the first glamour of this discovery, important as it is, the possibility, and, indeed, almost certainty, of great variations in the thickness of the beds at different sections along the strike due to original conditions of deposition should not be overlooked. Anyone, at the present day, who walks several miles along, say, any portion of the coast of England cannot fail to be impressed with the variations, often rapid, in the nature of the ground over which he walks—at one time sand, at another mud or shingle; all one day to represent beds of sandstone, shale or conglomerate. Surely, there is every reason to expect in the Witwatersrand System the same variations, the coming in of one bed, its thickening, then thinning out, then replacement by another. The dip of the strata also forms another important factor affecting the surface thickness of different sections.

Resultant Fault.—Dr. Mellor, in two of his papers, has pointed out that, in mapping, faults must necessarily be represented by more or less well defined lines, but that in nature such breaks are not always so definite, but are often made up of several smaller lines of fault or of much broken zones of country. This is a point which is very seldom thoroughly appreciated; but which the writer has often observed not only in mapping surface features but also in mining, and has found it a considerable help, both to clarify one's own ideas and also to explain to others the consequences of any such faulting, to consider the net result of the faulting movements as due to one single fault which one might term the "*resultant fault.*"

In connection with the faulting referred to above, Dr. Mellor points out that its course is everywhere marked by a pronounced contrast in the degree of dip shown by the beds on opposite sides of it. The dip of the beds on the south side is extremely high, being usually vertical, or slightly overtilted; while on the north side the dip is much lower, averaging about 40 degrees. This variation in dip has, apparently, been attributed to an intervening strike fault; and the course of the fault, in consequence, has been determined by this means. It is, however, not quite clear what is meant in the Survey Report when it goes on to state that the conditions presented at various localities, by reason of this fault, do not appear capable of explanation as the result of any simple fracture; but, appear to be the result of complicated folding, the main break bringing the limits of two different folds into contact with each other; and that although the Witwatersrand beds on the Rand are generally regarded as representing a continuous section and as forming part of a single synclinal fold and a synclinal arrangement is shown by the formation over a very large portion of the area, yet a consideration of the dips shown by the beds along its northern margin, forming a broad belt to the south of the main mass of the older granite, shows that these beds on the contrary form part of an anticlinal fold, separated on the south from the main syncline by the faulting described.[5] It is a little difficult to conceive how in the same area the lower portion of a conformable series can form the limb of an anticline while the upper portion, along the same section, forms one of the limbs of a syncline. If Dr. Mellor would illustrate this by drawing a diagramatic section it would tend to make his meaning much clearer.

Divisions of the Lower Witwatersrand System.—Dr. Mellor's division of the Lower Witwatersrand System into three series of beds Series are the Government Reef and the Coronation, or West Rand, and Hospital Hill Series, is a great help in simplifying one's ideas of the system as a whole. The latter series, including as it does, the Hospital Hill quartzites and Orange Grove quartzites, with all the intervening beds, makes a very well-defined and easily distinguishable series; but, the junction between the other two is unfortunately ill defined, and, therefore, apt to be misleading, and the position of the dividing line cannot always easily be fixed in the field.

Dr. Mellor has pointed out that in the Hamburg section, and also on the West Rand, the two best markers in the Government Reef Series are the Government Reef and the Coronation, or West Rand shales, and that in the former section the most characteristic feature of the Government Reef horizon is not so much any peculiarity in the reef itself as the manner in which it almost invariably lies on the shales below, *the junction being a sharp one;* and that, even when the pebble bed is absent, the same sharp junction of the shales and quartzites is seen, whilst in contrast with this the Coronation Reef, while lying close above very "magnetic" looking shales, rarely lies at the extreme base of the quartzites but has usually a few inches of quartzite or sandstone below it which passes down gradually into the underlying shales, and that between the foot of the Coronation quartzite and the Coronation shale the beds show all gradations from a coarse sandstone to a shale. These characteristics are also very well marked and form a distinctive feature between the two reefs on the far West Rand.

In dealing with Rietfontein no mention has been made of the faulted complicated area at the western end of the Rietfontein Mines, represented by the kopje immediately to the south of the No. 1 shaft: and, the writer would like to know to what beds the Survey believes the quartzites of this kopje belong. Also no reference has been made to certain boulder beds, resembling beds belonging to the Ventersdorp series, which also occur on this kopje and appear to rest unconformably on these quartzites.

With regard to the unconformable beds at the northern margin of the diabase on the north side of the Valley, it should be pointed out that these beds appear close to the foot of a ridge formed by the Ripple Marked Quartzites, and the long axes of the boulders are striking more or less parallel to the ridge itself. These beds have the appearance of being heaped up and deposited along the edge of the ridge as though they had been carried on the back, so to speak, of the diabase flow and deposited along its margin in much the same way as the writer has observed debris deposited as lateral moraines, along retaining mountain slopes, by glaciers in the higher Alpine districts of Switzerland. Dr. Mellor has made a great deal out of the presence of the mass of granite at the foot of the quartzite ridge on the southern side of the Valley near the western boundary of the Rietfontein Mines, and has maintained that if he is correct in grouping the quartzites above referred to at Rietfontein as Orange Grove, that the granite should underlie them, and on this account has mapped in a portion of old granite between the Rietfontein series and these quartzites, where there is no surface evidence to warrant this being done. Where granite does occur to the south-west of this, in the position already described, he accounts for the absence of these Witkopje, or Cherty, quartzites and the contact of granite with quartzites (which he has mapped as Hospital Hill quartzites), as due to faulting, and calls attention to it, to show the magnitude of the disturbance which has taken place in this locality along the line of fault which he refers to as Rietfontein fault. The quartzites appear to be striking under this granite, and the latter appeared to the writer to consist merely of a detached mass and not of rock in its true position; but, he has not had time to fully study this occurrence. The sheared nature of this granite is probably due to the same causes which produced this structure in the diabase of the valley.

The large expanse of diabase in this area, and, the fact that diabase dykes, 80 to 120 feet wide, are known to occur in the Rietfontein Mines, along a length of nearly two miles, suggest that one at least of the vents of eruption is situated in this immediate neighbourhood.

Dr. Mellor draws attention to the great differences in the reading of Witwatersrand Sections by various authors, and, to how much is yet needed before we can be said to be in a position to apply our knowledge of the section presented by the Witwatersrand area to the elucidation of the other districts where the same system of rocks occur;[6] also, to the fact that not until the Survey has been extended at least to the district west of Hamburg, will it be possible to deal completely with the area extending from Rietfontein No. 145 to Waterval No. 79, nor to draw any very reliable conclusions as to the extent and precise character of the modification which it has undergone, nor to adopt a system of classification and mapping likely to be generally applicable over the Witwatersrand area, or still more generally throughout the Witwatersrand System.[7] He also admits[8] there are many important questions still outstanding which require solution, and that not until satisfactory explanations have been found can our knowledge of what is, from an economic point of view, the most important system of rocks in the country, be said to be even tolerably complete; and, further, that the succession and thickness of the rocks of which the Witwatersrand System is composed offer very considerable difficulties, the evidence in many cases being too fragmentary to form a reliable basis for deduction, and the probability is that a satisfactory solution can only be found by careful comparison with other areas in which these rocks occur, when a sufficiently detailed survey of these shall have been made.[9]

Alternative reading of the Geology of the Bezuidenhout Valley and Rietfontein areas; and the linking up of Mellor's and Carrick's Surveys.—Dr. Mellor states that the Langerman's Kop beds and the Rietfontein Series (occurring respectively near the western and at the eastern extremities of the Bezuidenhout Valley), are most probably unconformable. The writer was technically connected with the Rietfontein Mines in 1907 and 1908, and although he studied the subject carefully he was unable to find any sufficient evidence to show that the Rietfontein series is unconformable; on the contrary it appeared to be regularly inter-bedded in the lower Witwatersrand System. The present Manager, Mr. F. Graham Bell, has mapped some beds of quartzites which are generally admitted, as by Dr. Mellor, to belong to the Lower Witwatersrand System; and on the same map he has projected the contours of the 8th level, which is about a mile in length. The result is remarkable in that it discloses how the windings of this level follow exactly those of the above-mentioned quartzites. This is hardly to be expected if the Rietfontein series are unconformable, unless the windings shown by these beds are due to earth movements posterior to the faulting-down of the Rietfontein series in amongst the beds of the Lower Witwatersrand series; and, there is no evidence towards the supposition that such movements have taken place. The writer has gone over several far West Rand sections of the Lower Witwatersrand beds and also over the Witpoortje, Hamburg, Johannesburg, Kensington, Langerman's Kop and Rietfontein sections, and has also studied the far East Rand section, as disclosed by numerous deep bore-holes, put down in that district seven, eight and nine years ago; and, as a consequence of comparing these sections, studying Dr. Mellor's detailed mapping of the more central area of the Witwatersrand, and studying also the work done by several other observers, especially that of the late Dr. Carrick, he has arrived at the conclusion that there is a far simpler explanation of the observed facts than that contained in the last report of the Geological Survey, and in Dr. Mellor's two recent papers before this Society.

That portion of the Lower Witwatersrand which lies below the Hospital Hill quartzites, as Dr. Mellor shows, is very well exposed for a distance over 20 miles from the farm Witkopje No. 151, on the east to the township of Maraisburg on the west, and as there is very general agreement over those beds which lie below the Hospital shales, they need not, therefore, enter into the present discussion; but, as Dr. Mellor states, the determination of the full succession of that portion of the system lying along the Hospital Hill slates is a much more difficult matter and about this it cannot be said that there is yet any general agreement.

He points out that the Coronation, or West Rand, shale has usually a well-marked slatey outcrop; and that on account of this and of its highly ferruginous character, and of its being banded somewhat after the manner of the Hospital Hill slate, it is liable to be mistaken for this latter rock; also, that in addition to the similarity between the two there is frequently found below the former a thin band of hard quartzite suggestive of the Speckled Bed which it somewhat resembles in appearance. To this the writer would add that on the far West Rand the lower portion of these shales are sometimes contorted, and then resemble the contorted bed in the Hospital Hill series; and, further, that an arkose and actually speckled quartzite can sometimes be found below this shale, as for example, just south of the homestead of Elandsvlei No. 161, on the far West Rand. As exemplifying the similarity between these two shale beds Dr. Mellor states that the late Dr. J. T. Carrick mistook the Coronation shale for the Hospital Hill shale, as on his map he has called Hospital Hill shale one which occupies the position of the Coronation shale. In this Dr. Mellor is undoubtedly correct. Dr. Carrick describes this shale as "distinctly a banded shale, i.e., a shale which contains a strongly magnetic band or belt of a highly siliceous character, in which the laminae are alternately black, brown, red, pink, grey or white."[10] These shales, except where covered by the Black Reef and Dolomite formations, have been traced under the name of Hospital Hill shale by Dr. Carrick, more or less continuously, from the farms Blaauwbank No. 355 and Venterspost No. 257, on the extreme south-west Rand, right away to the farms Roodepoort No. 53, and Vogelstruisfontein No. 333, where they join up with the Coronation shale mapped by Dr. Mellor. This being so the upper portion of the Great Basement shale of Dr. Carrick necessarily becomes the Hospital Hill shale of the Central Rand, and he has traced it from Elandsfontein No. 494 on the extreme south-western Rand to Wilgespruit No. 439, at the western end of Dr. Mellor's survey. Mr. David Draper, in his map dated 1896, three years before Carrick's map appeared, had called these same shales Hospital Hill slate. There can be no doubt about the identity of the upper portion of these Basement shales with the Hospital Hill slates. On the farm Witfontein No. 572, for example, there is an outcrop of very typical Hospital Hill quartzites near the homestead, dipping at about 28 degrees to the east. Their characteristic green colouration is here particularly well-marked. West of these, and just behind the homestead, is the Hospital Hill slate (which is the same bed which Dr. Carrick here maps as the upper portion of his Great Basement shale), with its characteristic contorted bed. Behind this again is a ridge of Ripple-marked quartzites exhibiting very well-marked "retaining wall" structure.

Dr. F. H. Hatch, in a report dated 12th June, 1902, on Dr. Carrick's Geological Map of the West Rand, states that he has followed with Dr. Carrick the Government Reef Series and the uppermost bed of magnetic shale, which, he states, Dr. Carrick terms Hospital Hill, *from its occurrence above the Hospital at Johannesburg;* thus by accepting its occurrence on Hospital Hill, it is clear that he fell into the same error. Both these geologists, therefore, mistook at that time, this Coronation shale for the Hospital Hall shale on account of the very great similarity between the two.

REFERENCES.

[1] "Some Structural Features of the Witwatersrand System on the Central Rand," Trans. Geo. Soc. S.A., Vol. xiv., 1911, p. 25.

[2] Bacon's Essays, vide chap. xxvii., "Of Friendship."

[3] Trans. Geo. Soc. S.A., Vol xiv., 1911.

[4] Annual Report of the Transvaal Geological Survey for 1910.

[5] Transvaal Geological Survey Report, 1910, p. 30.

[6] Trans. Geo. Soc. S.A., Vol. xiv., 1911, p. 102.

[7] Trans. Geo. Sur., 1910, p. 25.

[8] Trans. Geo. Soc. S.A., Vol. xiv., p. 100.

[9] Trans. Geo. Sur., 1910, p. 26.

[10] There is no date on Dr. Carrick's map of the far West Rand, but his report which accompanied it is dated October, 1899.

(*To be continued.*)

Bantjes Consolidated Mines.

During the December quarter the following results were obtained at the Bantjes Consolidated :—Development, 3,443ft.; reef disclosures: Main Reef Leader 120ft., width 31ins., assay value 11.1 dwts.; South Reef: 1,685ft., width 11ins., assay value 19.3 dwts; ore milled 72,045 tons, gold won 25,449 ozs., equal to 7.06 dwts. per ton; value £106,655, equal to 29s. 7d. per ton, working costs £90,436, equal to 25s. 8d. per ton working profit £16,218 equal to 4s. 6d. per ton; sundry revenue £1,401, net profit £17.619; estimated profits tax £1.469; reserve at December 31, 660 ozs.; net profit for 1911 £54.034. The capital account for the quarter shows a credit of £977 18s. 5d. The annual meeting of shareholders will be held in the board room the Corner House, Johannesburg, on March 14th, at 12 noon. It will be proposed at this meeting to adjourn until May 29, at 3 p.m., in order to give shareholders ample opportunity of perusing and considering the report and accounts, which it is anticipated will be in the hands of shareholders about April 6, before deciding as to the disposal of their proxies.

PROGRESS IN CYANIDATION OF GOLD AND SILVER ORES DURING 1911.—II.

An Interesting Summary of Metallurgical Advance—New Mills and New Processes—South Africa Well to the Front.

[By Alfred James.]

The following extracts have been taken from Mr. Alfred James' contribution to the *Mining and Scientific Press Annual*:—

New Mills.—Probably the most notable mills of the year are the Santa Gertrudis, Dome, Randfontein Central, City Deep, Brakpan, and Lonely Reef, the last a quite small mill but at the time of its starting probably the most up-to-date in Africa. The Lonely Reef company has already within three months after its starting the mill, declared a dividend. If the City Deep (decantation) be excepted as being really a last year's mill, possibly still somewhat in an unfinished stage, and the Randfontein Central as being of the standard but now obsolescent decantation practice with a vast number of stamps (600) instead of a greater proportion of tube-mills, it will be seen that all these new Mexican, Canadian, Rand, and Rhodesian mills have points in common. They all include stamps of 1,250 lb. or heavier, Dorr type thickeners (Brakpan excepted) air-lift agitation (Pachuca tanks), filtration of slime, and, with the exception of Lonely Reef, Merrill zinc-dust precipitation. They appear to have gone to work smoothly from the start (except the Dome, not yet started) and to be giving results which are records for their particular territories. The Stratton's Independence mill, treating dump, and the Alaska Treadwell mill, treating concentrate, are also note worthy, as will be seen later. The Tonopah Belmont, Modder B, and Palmarejo mills are not included, as details of the starting of these mills are not yet at hand.

. . . .

Some mystery appears to hang on the Benoni mill. Last year the technical press gave full details of the proposed equipment, the chief new feature of which appeared to be the Way-Arbuckle slime-plant. It is reported that after many delays the mill was started in October to comply with certain Government regulations, but that the slime equipment is not yet in working order; doubtless full information will be available later, and it is to be hoped that Mr. Way has made as great a success of the Benoni mill as he previously made of his New Kleinfontein plant; but the latter was based on the treatment methods prevalent at the time, whereas the Benoni slime-plant would appear to be based on practice as yet unproved and untried; except in so far as the unsuccessful experiments at the East Rand may be held to apply to it.

. . . .

New Processes.—It is the experience of many that old processes continually reappear under new names with some ingenious change ringing on old chemical or electrolytic methods. It is not, therefore, my practice in this review to refer to newly-proposed methods until the ordeal of practical trial has strengthened rather than effaced them. Usually money and time and trouble may be saved by a knowledge of the result of scientific speculations in the past, and a compilation of these schemes is needed, even though it prove a record mainly of obituary notices. The memory of the old Cassel electro-chlorination process still lingers, and with it the knowledge of the troubles then met in finding anodes that would stand the disintegrating action of passage of current, electrolysis of solution, and wear and tear of agitation of ore-pulp at the same time. It was obvious that the cyanamide process as described by J. C. Clancy must encounter just the difficulties that worried workers with the older process, and from all accounts this trouble has in fact caused delay in bringing the process to a working stage. In the same way the difficulty of the electrolysis of dilute solutions with complete precipitation of metals yet exists, and the troubles that befell Peletan-Clerici and Riecken still await the enthusiastic inventors who chronically rediscover these processes. Long before the advent of the Adair-Usher process it was found that displacement by upward solution was so imperfect as to be unreliable, and that the attempt to recover deposited thickened slime by a screw-conveyor working under water had caused the failure of many a filter or slime-treatment device, and it was, therefore, not a little surprising to learn of the huge sum (£30,000) stated to have been expended on the Arbuckle experiment at the East Rand. Similarly, the continuous reshuffling of the chemical reaction, solution, or oxidation processes led me to write for the last International Chemical Congress a brief sketch of the results of the employment of various oxides, alkalies, lead salts, lead coating, halogen salts, hypochlorites, accelerators, mercuric cyanide, and alkaline persulphates, with a note of their original introducers into the field of cyanidation. A glance back at history is often sufficient to indicate the part probably to be played by a "new" method, and that, too, even when the method involves some ingenious application of nice chemical reactions. And as this was my excuse to the reviewer who criticised the omission from "Cyanide Practice" of any reference to a certain process then advertised but never since heard of, so it may last year and to-day be taken as my reason for not including in this review of progress in *practice*, comments on ingenious scientific speculations.

Agitation.—The attempts to turn an air-lift agitator into a continuous decanting device have so far had as little success as the old attempt (this year repeated) to filter slime from the bottom of the agitation plant through a filter-bed immediately under the agitator. The feature of the year has undoubtedly been the almost universal adoption of the continuous system of agitation in Pachucas pioneered by A. Grothe, whose able and ingenious article on the principles of agitation in air-lift tanks has given us all food for much reflection. Who before was brave enough to discount what many thought the supreme advantage of the air-lift accelerated agitation, and to argue from the downward travel of the particles only? That article* should be read by all. But none the less, the continuous agitation method has brought to light many snags and pitfalls hitherto unsuspected, and from plants on all sides valuable experience is at hand as to means of overcoming the difficulties that crop up. Probably the best course for the intending user is to get into touch with Mr. Grothe at once and to obtain from him the latest results; otherwise he may repeat the experience of a company whose mill is stated in the technical press to have suffered delays of some months on account of the non-working of a locally-devised adaptation of the Pachuca tank. It cannot be too strongly urged that anyone modifying a standard agitator should first experiment with a glass model; he would then find that much of the so-called agitation is merely the escape of bubbles which, cleaving through the volume of liquid, make a great show at the surface, but fail to even slightly modify the descent of all but the finest particles of the slime-pulp.

The originally proposed method of connecting the tanks by inclined pipes is expensive, the more so as by-pass pipes are necessary and the stoppers are awkward to get at, and valves get choked by sand. M. H. Kuryla air-lifts the pulp across any particular tank it is wished to cut out, and Mr. Grothe has central feed and discharge tanks with the Pachucas grouped around so that any of the tanks can be made No. 1, and thus any particular tank can be cut out without difficulty. All tanks have discharge valves, and thus any tank can readily be made the last of the series. A simple system of continuous agitation has also been described by Huntington Adams.† This method can readily be adapted to existing tanks, and has the advantage of having all connections at the surface of the charge, but to one who has not seen the apparatus in operation the by-passes would appear liable to choke and the system of a variable-cut sampling box at each tank would seem to call our attention and adjustment—otherwise why the adjustments?—whereas it has been shown that the Grothe method does automatically give a pulp of equal screen analysis throughout. The provisions, however, in the last tank for agitating a partly filled tank when this is used as a reservoir for filling filters is surely a step in the right direction.

---

*"Mining and Scientific Press," July 15, 1911.

The form of dropping spider shown in the description of the Treadwell plant‡ is worthy of note. A spider which will start up within 15 minutes a densely-packed 30-ton mass of high specific gravity concentrate is an appliance of considerable value in the agitation of concentrate. The Trent tank has come into prominence during the year, mainly by reason of the description of it by J. W. Hutchinson§ He describes it as the most serious competitor of the flat-bottom agitator and as a good means of bringing flat-bottomed-tanks up to an efficiency comparable to that obtained by Pachucas. The agitator resembles a garden sprinkler, submerged in the pulp, which it agitates by reason of the motion imparted to the radial arms by an issuing stream of circulating pulp. In a personal letter Mr. Hutchinson states that Trent agitator takes 6½ h.p. to operate in a charge of 200 dry tons at a dilution of 1½ : 1.

(*To be continued.*)

---

†Bull. Amer. Inst. Min. Eng., August. 1911.

‡"Mining and Scientific Press." October 21. 1911.

§For description of Goldfields Consolidated Mill, see "Mining and Scientific Press." May 6, 13, 20, and 27, June 10, 1911; also, "Eng. and Min. Jour.," June 17. 1911.

Natal Coal Output.

The following are the outputs of the various collieries in Natal from 1909 to 1911:—

	1911. Tons.	1910. Tons.	1900. Tons.
Natal Navigation ...	347,426	333,635	300,797
Durban Navigation ...	271,171	276,878	164,198
Hlobane	214,699	119,470	64,373
Elandslaagte	203,405	231,387	194,393
Glencoe (Natal) ...	176,782	179,646	132,333
St. Georges	171,061	182,982	145,860
Burnside	157,045	92,627	—
Cambrian	155,097	152,719	125,937
Utrecht	147,857	15,921	—
South African ...	118,553	142,685	144,944
Hatting Spruit ...	93,044	90,400	40,908
Dundee	82,039	139,309	148,210
Newcastle	64,908	78,585	77,005
Ramsay	57,264	66,891	42,020
Natal Steam	56,220	72,325	61,624
Ballengeich	44,773	34,538	13,381
Talana	20,079	62,182	97,999
West Lennoxton ...	1,689	20,423	22,031
Dewar's Anthracite ...	3,998	2,745	—
Zululand	3,386	—	1,683
Other small Collieries	742	1,516	2,800
Central	—	—	6,114
Total ...	2,394,238	2,296,687	1,786,610

Increase in 1906 over 1905:—109,306 tons.
Increase in 1907 over 1906:—291,330 tons.
Increase in 1908 over 1907:—139,700 tons.
Increase in 1909 over 1908:—116,867 tons.
Increase in 1910 over 1909:—50,077 tons.
Increase in 1911 over 1910:— 97,551 tons.

Village Deep.

The report of the directors of the Village Deep for the December quarter may be summarised as follows:—Development, 6,903ft.; reef disclosure, Main Reef Leader, 1,699ft., width 31ins., assay value 13.5 dwts.; South Reef 1,564ft., width 20ins., assay value 13.1 dwts.; ore milled 146,600 tons, gold won 48,764 ozs., or 6.65 dwts. per ton, value £204,468 or 27s. 11d. per ton; working costs £137,822 or 18s. 10d. per ton; working profit £66,643 or 9s. 1d. per ton; sundry net revenue £1,324, net profit £67,969; estimated profits tax £7,133; reserve gold at December 31, 5,600 ozs. Estimated net profit for 1911, £227,375. The capital expenditure for the December quarter amounted to £12,243 18s. 5d., exclusive of the proportion of an annuity of £5,172 payable to the Government in respect of mining rights acquired under an area of 7.3701 claims. The annual meeting of shareholders will be held in the board room, the Corner House, on March 15, at 12 noon. It will be proposed at this meeting to adjourn until 30th May, 1912, at 11 a.m., in order to give shareholders ample opportunity of perusing and considering the report and accounts, which it is anticipated will be in the hands of shareholders about April 6, before deciding as to the disposal of their proxies.

Robinson Deep.

The directors' report for the quarter ended December 31, 1911, states: Mine.—Number of feet driven, sunk and risen, 3,901 feet; ore crushed, 147,400 tons; ore developed, estimated at about 89.257 tons—(This quarterly estimate of tonnage should not be expected to include all ore fully or partially developed during the period, as blocks of ground may be held over pending fuller information)—excess crushed during period, 58,143 tons. Mill.—During October an average of 210 stamps ran 29 days 20 hours 5 mins.; during November an average of 210 stamps ran 27 days 17 hours 2 mins.; during December an average of 200 stamps ran 26 days 2 hours 26 mins; total running time, 83 days 15 hours 33 min.; tons crushed, 147,400 tons; tons crushed per stamp per 24 hours, average 8.513 tons; yield in fine gold, 26.585.591 ozs.; yield per ton crushed in fine gold, 3.607 dwts. Tube Mills.—yield in fine gold, 12,848.051 ozs.; yield per ton crushed in fine gold, 1.743 dwts. Sands Works.—Sands treated (equal to 57.090 per cent. of tonnage milled), 84,150 tons; yield in fine gold, 12.617.509 ozs.; yield per ton treated in fine gold, 2.999 dwts.; yield per ton crushed in fine gold, 1.712 dwts. Slimes Works.—Slimes treated, 63,250 tons; yield in fine gold, 4.842.893 ozs.; yield per ton treated in fine gold, 1.531 dwts.; yield per ton crushed in fine gold, 0.658 dwts. Total Yield.—Total yield in fine gold from all sources, 56.894.047 ozs.; total yield per ton crushed in fine gold, 7.720 dwts. Working Expenditure and Revenue.—Working costs, £125,931 10s. 10d. (17s. 1.045d. per ton); profit on working carried down, £112.558 12s. (15s. 3.270d. per ton); revenue, £238,490 2s. 10d. (£1 12s. 4.315d. per ton); appropriation for additions and renewals fund, £7.500; profit tax (estimated), £9,000; amount appropriated for shaft sinking, £461 0s. 2d.; amount appropriated for bewaarplaatsen annuity, £15.000; net profit estimated, £81.621 13s. 7d.—total, £113,582 13s. 9d. The amount spent during the quarter chargeable to additions and renewals fund was: On additions, £5.937 4s. 2d.; on renewals, £3,919 14s. 4d; total, £9,856 18s. 6d. In addition to the sum of £7,500 appropriated for additions and renewals fund, an amount of £4.095 5s. 2d., being the value of 977 ounces fine gold recovered from the dismantled mill plates, has been placed to the credit of that fund and is not included in the profit for the quarter. The sum of £15,000, appropriated for the payment of the bewaarplaatsen annuity, represents an amount of £5,000 per month, which your Directors have decided to set aside out of profits for that purpose. At December 31, 1911, the gold in reserve was 4,656 ozs.

HENRY R. MERTON & Co., Ltd.

2, METAL EXCHANGE BUILDINGS,
LEADENHALL AVENUE, LONDON, E.C.
England.

Cable Address: "MERTON," London.

SELLERS OF

Copper, Tin, Lead, Spelter, Antimony, Nickel, Aluminium, Quicksilver, Sulphate of Copper, Zinc-dust.

South African Representatives:

MESSRS. PARRY, LEON & Co.,
Mercantile Buildings, Simmonds Street,
P.O. Box 1101. JOHANNESBURG.

Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiencesof Readers.

The Tin Fields.

To the Editor, *South African Mining Journal.*

Sir,—In your issue of 3rd inst., I have noticed a report concerning the tin fields west of Potgietersrust. Being myself an interested party in these fields, and a local resident, I cannot refrain from challenging a report of such a nature, having in view its detrimental effect upon the individual claim holder in this vicinity and the public in general as well. Also, reports of such an official nature have an important bearing on the future of any field wherever such report concerns. The report referred to states that on the Groenfontein property of the T.C.L. there is not sufficient ore to keep the battery going. I may point out that, in conjunction with the Roodepoort property, which belongs to the same company, there is quite a large amount of ore at grass. Besides, there are deposits proved to contain rich ore, such as the No. 30 Shaft on Groenfontein, and the borehole which struck rich tin several months ago. One wonders what is the matter that these are not opened up. Naturally, as there is on Groenfontein only one miner working, and on the Roodepoort portion other two miners, making a total of three miners and two managers, one cannot expect that a 10-stamp mill could be kept going. Secondly, and most interesting, is the statement made in regard to the Government lease claims leased to the above T.C.L. company. There does not appear in the report the percentage of tin per ton of ore milled, and how many thousand tons of ore have been carted and milled at the Groenfontein battery from the said lessee. Also, the report states that the ore body either does not exist at all, or entirely has lost its metallic value (of course, this is not quite distinctly what the defects are). However, the company, for one reason or another, has suspended mining entirely from the lease. The most peculiar part of it is the truthful statement in regard to the strike of tin in the shaft of the adjoining property, viz., the 39 claims block, or Zaaiplaats No. 2, which lies on the dip of the lease claims, the shaft being only within 30 feet west of the Lease boundary. The general public will be very glad to know how it is possible for the Lease lode to have pinched out or diminished if the values are to be found in such a short distance in the next shaft, and of such a favourable value. It is possible that a lode may be cut off by foreign intrusion or a fault—does there exist such a thing?—or the company's adit drive has reached, or nearly reached, its boundary, and by doing further work in that direction is liable, as a matter of course, to prove the better value of the adjoining claims belonging to different claim holders. More light on these points will give the greatest satisfaction to all interested in these fields. Now, sir, being aware of the valuable services always rendered to the public by your most esteemed and valuable paper, I hope you will be kind enough to insert this for the benefit of all concerned. Thanking you in anticipation, I am, etc.,

CLAIM-HOLDER.

Potgietersrust, February 12, 1912.

[The official report referred to was the quarterly report to September 30th, only lately published. A good deal may have been discovered since then, of course. The lease occurrence is not a lode, and although the No. 2 Syndicate have reached the pegmatite horizon and found tin, there is no evidence yet, as far as we are aware, of a payable body having been discovered.—ED. *S.A.M.J.*]

Circular vs. Rectangular Shafts.

A DEFENCE OF THE CIRCULAR SHAPE.

To the Editor, *South African Mining Journal.*

Sir,—The relative advantages of circular and rectangular shafts have proved a hardy annual to more than one technical journal and technical society. I remember in my School of Mines days, the Professor of Mining, when he came to the lecture hall without a prepared subject, would quickly work up a mild enthusiasm among his students on this much discussed matter. In fact, "Smythe's Rule" and "Round v. Rectangular shafts" constituted his stock in trade of unpremeditated lays. Your contributor "M.H.C.," who makes "a vigorous statement of the case for the rectangular shape" in the last issue of the *Journal*, has added little to what the Professor in question told us, to what one may read in C. le Neve Foster's Text Book, or to what has on previous occasions (if I mistake not) appeared in the *South African Mining Journal*. Why "M.H.C." should write of Mr. E. Mackay Heriot's contribution, "It must not be forgotten the author is an English engineer, writing to an English technical paper, and may, therefore, be excused if he is ignorant of the methods employed in modern rectangular shaft sinking operations" is more than I can understand. Does "M.H.C." imagine that there are no rectangular shafts in England, and that no English mining engineers have knowledge of modern rectangular shaft sinking? If he does, he is sadly mistaken. I admit that not only in the coal districts, but in the metalliferous areas also, the majority of shafts sunk of recent years have been of circular shape, but several important rectangular pits have also been put down—to cite but one instance, the new Robinson shaft, at the South Crofty mine, perhaps, the most progressive property in Cornwall to-day. In so far as colliery practice is concerned the preference for round shafts is easily understood. As a rule, the shafts are sunk through comparatively soft strata, more or less saturated with water, and, obviously, the primary consideration in such cases must be efficient support of the sides. It will be conceded that nothing can equal the circular form, in the matter of support, for resisting heavy pressure, and as this form most readily lends itself to the employment of brick or iron lining, it affords also the maximum facilities in sealing off the water. Metalliferous mine shafts, on the contrary, are usually sunk in hard rock, stable in the mass, but loosening under prolonged exposure. As a rule, no attempt is made to seal off any flow of water, which is either pumped at once or conveyed to a lower level. Under such circumstances, masonry is not necessary, whilst timber affords a sufficient support. For the economic use of timber the shaft should be rectangular, and there is little doubt that, in most districts, such a shaft is cheaper in construction than a circular shaft lined with masonry. Good circular shafts are far and away the most reliable, and they possess very important advantages over rectangular pits in such vital matters as ability to deal with large quantities of water and ventilation. Of course, it is admitted that first cost is a serious disadvantage of the circular type of shaft, and, before deciding on recommending the type, the cautious engineer will ask himself: "Is it worth while?" In a new and unproven mine, it is not; in a deeper but doubtful proposition with an uncertain future, the additional outlay may be scarcely justified, but as a permanent shaft to a second horizon, or a shaft designed to form one of the main thoroughfares—perhaps the only thoroughfare—to deep level development of a metalliferous deposit of the value of which some fairly accurate idea is already possessed, as, for instance, at the New Modderfontein, there is a great deal to be said in favour of the circular type.—I am, etc.,

"AJAX."

Johannesburg, February 15, 1912.

MINING MEN AND MATTERS.

Mr. J. W. Beatty has been appointed Assistant Manager of the Langlaagte Consolidated.

* * * *

The monthly meeting of the Chemical Metallurgical and Mining Society will be held this (Saturday) evening.

* * * *

Sir Lewis Michell leaves Capetown for Bulawayo at the end of this week in order to succeed the Marquess of Winchester as visiting director in Rhodesia of the Chartered Company.

* * * *

We understand that Mr. C. Baring Horwood, who recently returned to the Rand to make reports on certain properties, has been appointed joint manager of the Randfontein Central.

* * * *

We regret to announce the death of Mr. John Pitts, Secretary of the Rand Pioneers, and formerly Secretary of the Johannesburg Consolidated Investment Co., Ltd., which occurred suddenly on Thursday.

* * * *

The Marquess of Winchester, with Major Sam Weil, and Mr. Pickering, the new manager of the Chartered Company's Mines Development Company, is visiting the Giant, New Found Out, Cam and Motor, and other properties in the Gatooma District.

* * * *

The death occurred this week at the Dudley Nursing Home of Mr. J. Arthur Johnstone, the manager of the Braamfontein Company. The late Mr. Johnstone occupied the position of manager to the Braamfontein Company for the past nine years, which position he filled with conspicuous ability and success. Prior to that he was sub-manager of the Irene Estates. The father of the deceased was manager of the Randfontein group of mines for many years. Mr. Johnstone was one of the early Barberton pioneers.

* * * *

Mr. H. S. Harger presided on Monday night at the monthly meeting of the Geological Society of South Africa, which was held in the Council Chamber at the Chamber of Mines. Mr. E. H. Nellmapius and Dr. E. Rimann were elected members of the society. The two papers, "Xenoliths in Gabbro, near Belfast, Transvaal," by Mr. J. P. Johnson, and "The Intrusive Rocks of the Witwatersrand," by Mr. D. P. MacDonald, M.A., B.Sc., were passed over undiscussed. A technical criticism of the paper entitled "The Normal Section of the Lower Witwatersrand System on the Central Rand, and its connection with West Rand Sections," by Dr. E. T. Mellor, D.Sc., was read. During the course of his criticism the author put forward an alternative reading of the geological survey of Bezuidenhout Valley and Rietfontein areas. Dr. Mellor briefly replied. Mr. E. H. Nellmapius read a paper entitled "Note on the Occurrence and Origin of the Vredeehoek Tin Deposits, Capetown," and Mr. C. Baring Horwod, B.Sc., A.R.S.M., A.M.I.C.E., a paper on "Iridosmene from the New Rietfontein Mines: Its Analysis, Occurrence and Genesis."

ECONOMY IN FUEL.

Users of coal for domestic, business or steam-raising purposes are now recognizing the saving of time and money effected by using only the best Transvaal coal and this coal is mined from the Vaalbank (Middelburg) Colliery.

This coal which can be obtained at about the same price as inferior coal, gives the highest heating value of any Transvaal coal, burns regularly and gives a minimum of ash or soot, and the fact that a trial order is always followed by repeat orders confirms the favourable opinions expressed by the present users of the coal.

Supplies of Vaalbank coal can be obtained from:—Johannesburg—A. E. Dunstone, Box 5034; The Holmes, Darcy Coal Agency, Box 5176; Benoni—Lindsay & Pirie, Box 5; Unsted & Holland, Box 316; Webb & Co., Box 370; Boksburg—J. D. Campbell, 105, Commissioner Street; Germiston—C. A. Margach, Box 223; Heidelberg—L. Lowenstein, Box 175; Bloemhof—J. Leviton; Kimberley—A. G. Freeman, Box 154; Pretoria—R. Butler & Co, Box 747; J. Franklin, Box 51; Middelburg—H. Laver & Co., Box 94; Lydenburg—M. McGee, Box 24; Pilgrim's Rest—J. H. Alcock, Box 36; Barberton—D. Wasserberg & Co., Box 167; Delagoa Bay—I. Sangiorgio-Borruso, Box 366; Pietersburg—B. Herman, Box 36

Zinc Dust for Rand Mines.

The Broken Hill Proprietary Company has appointed Messrs Fraser and Chalmers, Ltd., as their agents in Johannesburg for supplying zinc dust to the Rand mines. The product is now largely used instead of zinc shavings, as results with the former have been proved to be better. The Broken Hill Proprietary Company are large producers of zinc dust.

Benoni Venture Syndicate, Ltd.

Through the courtesy of the Chairman and Acting Manager of the above Syndicate we are in a position to publish the following from the annual report on the Benoni Venture Syndicate, to be submitted to the shareholders at the annual meeting to be held in March next:—"This venture was floated in May, 1910. The capital was fixed at £7,000, of which £4,000 was reserved for working capital. In view of ample development, which enabled the mine to be carefully sampled, the Board decided to proceed at once with the erection of a reduction plant. In reviewing the past year's operations this policy has been amply justified. Machinery and plant: A 56 h.p. gas engine with a 96 h.p. producer was ordered from Messrs. Campbell of Halifax; a Sandycroft 5-head mill, with stamps of 1,750 lbs.; a Cammell Laird mortar box completed the mill outfit, which is up-to-date in type and of the best workmanship. A Blake-Marsden stone breaker (24 x 16), capable of feeding 15 stamps, has worked throughout with ample margin. Considering that we were acquiring a venture which has been left derelict for many years and that successive efforts to float the concern ended abortively, and again in the bringing up of the mine to the producing stage with a capital of exceeding modesty, and avoidance of loans and overdrafts—the first year of operations must be taken as very satisfactory, and the coming year should show a substantial improvement. Details of Milling, 1911:—Days (24 hours running), January to June, 120.28, July to December, 140.2; running time, 66.4 per cent., 76 per cent.; tons milled, 3493.75, 3966.65; duty per stamp, 5.85, 5.34; bullion in ozs., 908.45, 1300.2; value in fine gold, £3,371 9s., £4,851 8s. 4d.; yield per ton, 19.3s., 24.45s.; grand total for year 7487.7 tons; 2208.65 ozs.; value £8,222 17s. 4d.

New S.A. Companies Registered in London.

African Consolidated Investment Company, registered January 16, with a capital of £100, in £1 shares, to carry on the business indicated by the title. Private company. R. Warner is first Managing Director and Secretary. Registered by R. Warner, 10, Walbrook, London, E.C.

White Sabi Gold Mining Company.—This company was registered on January 19, with a capital of £10,000, in £1 shares, to carry on the business of miners, prospectors, explorers, etc., and to adopt an agreement with the Rhodesia Gold Mining and Investment Co., Ltd. (incorporated in Rhodesia). Minimum cash subscription, seven shares. The number of Directors is not to be less than two nor more than five. The first are G. R. Lewis and G. E. Duveen. Registered by Ingle, Holmes and Co., Capel House, London, E.C.

LITERATURE FOR

MINING CAMPS.

MINE READING ROOMS should send direct to London for their Literary Books and Periodicals, or for Technical Books for individual use. List of Rates of Subscription for 1,500 Periodicals; also complete Book Catalogue of 180 pp. post free.

Colonial Librarians' Handbook free on application.

SPECIALITY: Colonial Editions of Fiction.

Remit direct, or through your London Office at choice.

ALFRED WILSON, Export Bookseller,

18-19 Gracechurch Street, LONDON, E.C.

(Established 1851.)

Rhodesian Section.

LATEST MINING NEWS.

The Intabanenda Mine—The Huguenot in Liquidation—Penhalonga Returns—Yankee Doodle Developments—Progress at the Bell Mine—Wanderer Returns—An Interesting Rumour.

The Charterland and General Exploration and Finance Co., Ltd. (owners of the Old Nic Mine), have taken a working option over the Intabanenda Mine, owned by the estate of the late Mr. B. Smallie. The property is situate a few miles to the north of the Bucks Reef, and the agreement covers a period of nine months. The last return made by the Intabanenda was for November, when 255 tons were crushed (5 stamps) for a recovery of 87 ozs. Development is at present taking place on the second level, where, it is rumoured, the value of the reef is substantially above the previous average. Driving here extends for 150 feet; the first level has been driven on for a length of 600 feet.

* * * *

The Huguenot Gold Mines, Ltd., is in liquidation, and the liquidators are desirous of disposing of the property of the concern. It is announced that tenders will be received for: The purchase outright for the 10 blocks of claims; all or any portion of the plant, consisting of new 3-stamp (1,250 lbs.), Sandycroft mill; 40 h.p. Ruston Proctor engine, etc.; the right to tribute the mine, or the option to purchase at a price to be arranged (with or without a certain amount of development being done), or the right to re-construct a new company on lines, and for such purchase price in cash and shares as may be agreed upon.

* * * *

The December recovery of the Penhalonga Co. shows a loss of £146 (including London expenses) which is equivalent to 6d. per ton. An office note states that shaft repairs are seriously interfering with haulage of ore below No. 5 level. A later cable gives the following particulars:—"No. 9 level, east drive extended 22ft.; assays 3 dwts. 18 grs. gold, 8 ozs. silver over 74 ins. Remainder development in country rock." The proposed "working arrangement" of the Penhalonga and Rezende mines has met with so much disfavour that it is to be abandoned for the present. If a valuation of property, agreeable to both companies, could be come to, it would be probably much better if they were amalgamated, as they are already not only run by the same management but are jointly interested in their power schemes.

* * * *

The local office of the Selukwe-Columbia G.M., Ltd., has sent the following cable to the London Board: "Consulting engineer reports: Western section, main reef has been struck in cross-cut, west drive, No. 8 level; reef is 52 inches wide, assaying 10 dwts. per ton." Reports from the Yankee Doodle have latterly indicated that broken ground had been encountered, and the above results are, consequently, regarded as being highly satisfactory.

* * * *

Work on the new main shaft at the Bell Mine is making rapid progress, and the erection of the new headgear, which machinery has been taken over from the Killarney, is under way. Developments at the 6th level have shown a longer pay shoot than exists elsewhere in the mine, so far as at present opened up, and in addition values are above the average on the whole. It is proposed to test a parcel of the ore at the experimental plant which is being erected at Gadzema before deciding definitely on the plant to be erected.

* * * *

Working expenses on the Wanderer and Camperdown for December, including development work, are returned at £6,978; capital expenditure amounted to £9. The value of the recovery was £8,071, which is better than the return for November, due to an improvement in the grade of the ore milled.

* * * *

According to the Salisbury correspondent of the *Rhodesian Mining Review*, a rumour which has brought the "Lonrho" Company into the amalgamation recently effected by the Goldfields and the R.E. & D. companies has been current in Salisbury. The correspondent continues: "But it is a *canard* pure and simple, without an atom of foundation; and, when one considers the matter, the absurdity of the suggestion becomes more and more apparent. Such an absorption by the Goldfields is impracticable and impossible, except on terms which the Weil group would never dream of entertaining. With the exception of the Cam and Motor Mine, which is probably the best thing in the country next to the Shamva, the "Lonrho" Company possess nothing that the mining community think much of. The Giant reef is still a "lost sheep," and, as to the Hay, it is by no means regarded as an assured proposition; while as to the other properties of the "Lonrho" Company, they can only be said to be, at present, in the prospecting stage. No doubt the Goldfields would very much like to gain control of the Cam and Motor, and, if rumour is true, they are doing all they can to secure it, by quietly and unobtrusively picking up Cam and Motor shares whenever they come on offer. But the remainder of the "Lonrho" properties the Goldfields do not want. It will be seen therefore that any amalgamation of the two corporations is extremely unlikely. The Cam reef at the fourth level, by the way, runs to a width of over 100 feet, with values as high as, if not higher than, those of the upper levels, and why investors do not take advantage of the present depression to acquire shares in the company, at their present absurd price of about 32s., passes comprehension. If the Goldfields ever get control of the mine, which is by no means improbable, the quotation will not long remain at anything like the present figure."

Amalgamated Properties of Rhodesia.

On Thursday, in mail week, the meeting of shareholders in this company was held. The directors' report now issued has caused disappointment in some quarters owing to the continual loss shown, but it was obvious that owing to the heavy fall in Rhodesian mines and properties this was unavoidable. Whenever the market turns, moreover, this loss will be made good again. The report, which covers the period ended June 30th last, calls attention to the amount of £ 178,743 at debit of profit and loss account, which represents depreciation on quoted shares as at June 30, 1911, according to the Stock Exchange quotations of that date. The directors have thought it advisable to write this amount off, but point out that any appreciation in the price of these securities since that date will, when realised, go in reduction of this item. The board state that certain assets were acquired from five separate vendors under five contracts of purchase, and these are the contracts about which so much ink was spilled. Negotiations are now proceeding for the effective cancellation of two of these transactions. With regard to a third, under which a very large number of fully-paid shares in the capital of the company were given as purchase consideration, a writ has been issued for a rescission of the contract and damages. The fourth transaction is now the subject of inquiry, and if not satisfactory, steps will be taken to have this set aside. With reference to the fifth, the directors state that explanations will be given at the meeting which will show that this transaction was a satisfactory one, and in the interests of the shareholders. The older assets of the company are undoubtedly very valuable. At the ordinary general meeting an extraordinary resolution is to be submitted, the principal object being to eliminate the power of the directors to increase the capital of the company.

A NEW FLOTATION.

Proposed Formation of a Company to Work the Pickstone Claims—Mr. Pringle's Report Discussed.

A SCHEME is afoot to float a new Rhodesian concern, which will acquire and work certain well-known blocks of claims in the Hartley District of Mashonaland. We have had the opportunity of carefully examining the mine assay plans and engineer's report, and have no hesitation in saying that provided the aims and intentions of the company as proposed by the promoters are adhered to the proposition seemingly possesses distinct chances of success.

It is proposed by the S.L. Syndicate, the members of which are William Macdonald Stokes, of Hartley, Rhodesia, Alfred Ernest Ward, and Baillie Munro Stokes, both of Glencairn, Gatooma, Rhodesia, and Harry Stokes, of Pickstone, Hartley, Rhodesia, to float a Company with the object of acquiring from the Syndicate certain 5 blocks, each of 10 gold claims, situated in the Hartley District and known as: Pickstone, 1.W., Pickstone, Pickstone, I.E., Pickstone, 2 E, Pickstone, N.D.B.; together with the option to acquire two further Blocks known as "Duchess" and "Duchess N. D. B." The first five blocks of claims and the Duchess N. D. B. are registered in the name of the syndicate. The laudable intention of the syndicate is to keep the capital of the company within moderate limits, and not to encumber the concern with superfluous plant, whilst at the same time the claims will be worked with a view to securing a maximum of real profit. It is suggested that the nominal capital of the Company shall be £45,000, divided into 45,000 ordinary shares of £1 each, to be appropriated as follows:—To the vendors of the above-mentioned blocks of claims and options in shares, 24,000; to provide cash capital to pay costs of promotion and registration of the company: costs of transfer of the above-mentioned properties to the company and to provide similar incidental expenses and for working capital which will be needed for the purpose of further machinery, tools and plant, and for working claims, 12,000; in reserve, 9,000. Of the 24,000 shares to the vendors, 7,500 will on the flotation of the Company be added to the reserve, the vendors receiving in lieu thereof, 7,500 first preference debentures to be secured by a first bond on all the company's assets, and to bear interest at 6 per cent. per annum, the vendors having the option at any time, against the surrender of these debentures to the company, to have the bond covering the debentures cancelled and to receive from the reserve or from any subsequent issue of shares which the Company shall, if called upon to do so, be bound to create, 7,500 ordinary shares in the company. The directors of the company will be: William MacDonald Stokes, Alfred Ernest Ward, Baillie Munro Stokes, and two others who will join after allotment. A detailed report on the Pickstone Blocks has been prepared by Mr. R. W. Pringle, A.R.S.M., M.A.I.M.E. In the course of his report Mr. Pringle states that the properties are situated about 17 miles east of Hartley (on the flanks of Duchess Hill) and about half a mile east of Concession Hill. Duchess Hill consists of a compact ridge of what is called banded ironstones. At the foot of the ridge the banded ironstone ends and basic schists (probably derived from gabbros) come in.

In the Pickstone Mine three separate reefs have been worked and more or less developed, and a large quarry conaining rubble has been opened. From November, 1907, to September, 1911, £26,715 10s. 7d. were recovered, a Tremain mill only being in operation.

Pickstone West Mine.

The Pickstone West Mine, which is regarded as being of much greater importance than the Pickstone, is situated to the west of the workings just described, and at the foot of Duchess Hill. It consists of a deposit of oxide of iron, carrying gold values which although developed only to 100 ft. level and for about 330 ft. on the strike, can already claim to be a large mine. The deposit has been developed on the 30ft. and 100 ft. levels, while cross cuts have been put in at the 42 ft. and 60 ft. levels. The deposits have a strike of 55 deg. west of north, and have no dip, being approximately vertical Six blocks constitute the pay portion of the mine at present. Outside of these blocks an examination of the plan shows values are below working costs; that is they average less than 2½ dwts.

Ore Reserves.

Mr. Pringle estimates the profitable ore reserves at about 45,000 tons, and allowing 0.5 dwts. "loss" their value is given at 7.632 dwts. per ton. Mr. Pringle estimates working costs at 10/6 per ton, thus leaving a profit of £48,615 on the ore reserves at present "in sight." Mr. Pringle goes on to state that "Technically none of the ore developed is in sight because in no instance are values obtainable on three sides, there being no winzes and the shafts being closely timbered. The use of this ambiguous and unsatisfactory term "ore in sight" is to be regretted, but it is clear from a careful examination of the mine plans that the syndicate has approximately 45,000 tons of ore available for immediate stoping—this ore, according to the assay plans of the mine and careful sampling being of seven and a half dwts. value. We observe that Mr. Pringle in his report advises that the cheapest underground method of working would be obtained by adopting a caving system. Since Mr. Pringle's report was completed a further reef has been opened up giving better returns than anything yet found on the property, but as the workings so far are merely on the surface it is not proposed to make any further reference to this reef. The estimate of working costs in the engineer's report has been most carefully made: it will be noted that the costs are low and that there is every reason to believe that with working larger quantities of ore these costs can be reduced. The licences payable on 10 gold claims in Rhodesia from which gold is being won are £5 per month for each block of 10 claims. The Chartered Company is further entitled to 2½ per cent. of the value of the gold recovered monthly. The two Duchess blocks will be under option to the company up to the 1st September, 1912, and the company will then be entitled to purchase the two blocks for £200, provided that the claims are used only for the purpose of erecting machinery, whilst the mining rights will be purchasable up to the 1st day of September, 1913, for a further sum of £500. All the above blocks of claims are adjacent to one another, and form a compact block of ground. The purchase consideration to be paid to the vendors represents the following cash disbursements made by them:—(1) £21,359, being the actual cash cost to the vendors of the mining rights to be acquired by the company: this is inclusive of a sum of £5,979, spent in developing the mine and the purchase of 2 boilers, 1 hoist and pumping plant, as also costs of sampling, assaying, surveys and so forth; (2) £3.500 approximately, being cost of plant on the property consisting of 3 Tremain mills, 1 cyanide plant, rails, trucks, pumps, houses, compound, tools, stores, 2 wagons and 2 spans oxen. These are all in good working condition and are being used in connection with the working of the Pickstone blocks. Their present value is estimated by the vendors at £2,953.

Proposed Plant.

In regard to the question of designe of equipment Mr. Pringle has advised as follows:—"Consideration of first cost and simplicity in working would indicate an all slimes plant as the most ideal to instal. It is impossible, however, to say with the available data what would be the best plant. The mill test just concluded indicates that a good extraction can be effected by amalgamation and treatment of sands by cyanide. He further states it would be as well to avoid amalgamation if possible. Whether a combined sands and slimes plant would be preferable to an all sliming plant, can only be demonstrated by experiment.

GENERAL CONCLUSIONS.

Although we have not visited the property an examination of the plans, of Mr. Pringle's report, and of certain specimens which have been shown us by Mr. Stokes seems to indicate that there are certain features of resemblance between these claims lying on the flanks of Duchess Hill and the banded ironstone, and associated schist deposit worked by the Giant Mines at Gadzema. The questions of the continuity of the ore body below 100 ft. level, and change in depth from oxide to sulphide zone are, of course, of great importance. Valuable light would be thrown on these matters by diamond drilling. Taking everything into consideration the outlook for this concern appears to be distinctly good. With a 100-ton a day plant working 300 days a year there is more than 1½ years supply already available. The present reserves show a profit of 21/4 per ton, which would indicate an annual profit of over £31,000. This is from the Pickstone West alone. With additions of rich ore from the Pickstone Mine this figure should be materially increased. What may happen with depth is, of course, a matter which only further development can decide; but the evidence available all points to a continuation of the present bodies of ore with depth and probably on the strike as well, in which latter case the output for each additional level will be increased and development charges per ton reduced. A feature of the proposed flotation is the moderate capital, which bears a very satisfactory relation to the estimated value and profit to be derived from the ore reserves.

The Claremont.

The output returns for January are as follows: Battery gold, 858.01 fine ozs.; ore milled, 2,421 tons; value of gold, £3,593; working expenses, £2,295 9s. 10d.; profit, £1,297 10s. 2d; working expenses per ton milled, 18s. 11.584d.; number of stamps running, 20; number of days mill ran 25.052.

Eldorado Banket.

The Eldorado Banket Gold Mining Company, Limited, issues a report for the three months ended December 31, which estimates the profit for the period at £31,066. The accumulated tailings on hand at December 31 will yield, it is estimated, a further profit of about £2,000. The estimated balance of net profit, including the estimated profit on accumulated tailings, after deduction of the interim dividends, and subject to the customary depreciation allowances, amounted at December 31 to approximately £23,400. Work during the quarter was mainly concentrated on the further opening up of the eighth level, cross-cutting to the reef at the ninth level, and the continued sinking of the main shafts. In view of the adverse rumours prevalent with regard to recent developments, the Consulting Engineer was instructed to visit the mine and had reported that the condition of the mine was quite satisfactory. In order to allay any anxiety on the part of shareholders, the directors have requested Mr. H. A. Piper, the Consulting Engineer to the Gold Fields Rhodesian Development Company, who is about to take over the duties of Head Consulting Engineer to the Eldorado Banket Company, to make an early examination of the property, and to cable a summary of his report to the board.

Chicago-Gaika Development.

In submitting accounts for the year ended June 30 last, the Directors of the Chicago-Gaika Development Company, Limited, state that the profit and loss account shows a credit balance of £12,825, which, added to £1,333 brought forward, makes a total credit of £14,158. Of this amount, the directors have written off £251 against income-tax, and £12,000 off the property and outlay account, leaving a balance of £1,907 to be carried forward. The cash resources at the date of the balance-sheet were £31,600, and it will be seen that the market value of the share investments was considerably higher than that at which they stand in the balance-sheet. On the Gaika Mine the results for the year have been entirely satisfactory, and the development work now proceeding is highly encouraging for the future success of the mine. The company has acquired a 25 per cent. interest in the Connemara and Renmore (96 claims), and an option to acquire a similar interest in an option on the Cork (90 claims), situate near the Hunter's Road Siding, in the Gwelo district. The property contains banded ironstone ore bodies of great width and extent, and of considerable promise. Development is now proceeding with encouraging results. The company has also acquired a 15 per cent. interest, with a call of a further 10 per cent. in an option on the Cactus (120 claims), situated some nine miles from the Globe and Phoenix Mine in the Gwelo district, upon which the development work now progressing is of a satisfactory character. The company has further acquired a 34 per cent. interest in an option on a new discovery of tin in the Victoria district (14 blocks of claims, the equivalent of 420 gold claims or an area of 920 acres). Very rich float tin has been found on this property, and development work is proceeding with a view to locating the main lode.

Mine Signalling and the New Government Regulations.

Our representative has had an opportunity of inspecting a very interesting exhibit at the Mining Exhibition which is now being held at the School of Mines and Technology. This exhibit is shown by the Government Telephone Department, and consists of what is called a private branch exchange, which is of the same pattern as generally used in town and on the mines. The sub-exchange installed at the Exhibition is connected to the Government main exchange in town. Through the courtesy of an engineer of the Telephone Department, we were shown the actual working of this simple installation. The mine telephones exhibited were connected up in such a way that a practical demonstration could be made by anyone speaking to the first, fourth, or fifth level of a mine, and vice-versa. Further, a communication from either of the levels could be made through the town exchange to any other telephone (surface or underground) between Springs and Randfontein. The exhibit appeals to us as being a most useful and practical demonstration of the important part played by telephony in case of accidents, and of the help that could be given in such an event. We are sure that it will appeal to all mine managers and engineers as a good and safe method of meeting the new Government regulations on mine signalling.

THE STOBIE PATENT RESPIRATOR

Only weighs half an ounce. Cheapest, most effective and comfortable in the market.

Order wholesale from Stobie Company (Ltd.), Box 2321, Johannesburg, or retail locally through your chemist.

Miners' Phthisis prevented by the use of Stobie Respirator.

CERTIFICATED MINE MANAGER

With 20 years' experience in the Transvaal is open for engagement at the beginning of March. Excellent credentials and well recommended. Apply—B.L., c/o "S A. Mining Journal," Box 963, Johannesburg.

JANUARY OUTPUT CONSTITUTES ANOTHER RECORD.

A Notable Increase—Labour Supply Improving—Some Disappointments,

THE gold production for the Transvaal for January constitutes a record. The total declaration of 737,060 ozs. of fine gold, of the value of £3,130,830, is an appreciable advance on the record of 719,729 ozs., value £3,057,213, put up for November. In November the record was made possible by the inclusion of £78,000 worth of gold won by the Modderfontein B, and for January £84,000 worth of reserve gold won previous to January, now included, and £27,000 worth from the new contributor, Benoni-Consolidated—together over £111,000—accounts for the increase. The increase over the previous highest yield is for the Transvaal £73,617, and for the Rand £75,691, outside districts returning for January £2,074 less than the value produced in November. The reserve gold which has been included in the January return has been contributed by East Rand Proprietary Mines, 17,898 ozs., value £76,026, and New Kleinfontein, 1,865 ozs., value £7,926—together 19,763 ozs., value £83,952. The new entrant into the producing list, Benoni, returns 6,433 ozs., value £27,326, which makes the total of abnormal additions, abnormal to the extent of reserve gold, amount to 26,196 ozs., value £111,278. Compared with December, the record total shows an increase of 27,152 ozs., value £115,331. The Rand contributes an increase over December returns of 28,498 ozs., value £121,052, while outside districts are short of the previous month by 1,346 ozs., value £5,721. Apart from November, when the entrance of Modder B. as a contributor put up the daily average yield considerably, the January output per diem averages higher than for any other month, except for last September. There is a decrease in the total number of stamps at work, while the number of tube mills remain the same. The labour position has improved as shown by an increase of over six thousand, of which gold mines have received the benefit of most. The profits have not kept pace with the yield, for they are £44,121 short of what was declared for December, and £31,833 below the corresponding month of 1911.

The following are the salient figures:—

Total output	737,060 ozs.
Value	£3,130,830
Increase	27,152 ozs.
Value ..	£115,331
Rand output	709,280 ozs.
Value	£3,012,832
Increase ...	28,498 ozs.
Value	£121,052
Outside districts	27,780 ozs.
Value	£117,998
Decrease ...	1,346 ozs.
Value	£5,721
Total stamps	10,068
Decrease	127
Rand	9,485
Decrease	80
Outside	583
Decrease ...	47
Tube mills	254

LABOUR.

There is an increase of 6,126 according to the W.L.N.A. figures compared with December, on the total employed on gold, coal, and diamond mines. There is an increase on gold mines of 5,764, and a decrease on coal mines of 248, while diamond mines increased their complement by 610. The figures for the past three months of the number employed by members of the W.L.N.A. at the end of each month read:—

	Nov.	Dec.	Jan.
Gold	176,736	178,282	184,046
Coal	8,043	8,043	7,805
Diamond	10,071	8,914	9,524
Totals	194,850	195,249	201,375

STAMPS.

The stamp position for the month for the Transvaal shows a decrease of 127 heads in operation. The Rand shows a decrease of 80 and outside districts operated 47 less.

THE PROGRESSIVE OUTPUT—FIRST DOZEN.

The returns from the twelve leading companies, the composition again being the same as for the two previous months, in the aggregate show that fifteen more stamps were in operation, contributed by the Randfontein Central, and one more tube mill. There was an increase of tonnage crushed of 67,989, and more gold to the value of £33,644. was produced. There is no alteration in the order of the first seven, then Simmer and Jack recedes from eight to tenth on the list; Robinson Deep goes up one, and Nourse Mines two places. Village Deep, which was twelfth for December, takes eleventh place, and Village Main, which was tenth, is now last.

	Stamps.	Tube Mills.	Tons Crushed.	Value.
Randfontein Central	790	26	215,556	£265,275
Crown Mines	620	19	186,055	255,769
E.R.P.M.	820	25	164,550	243,565
Robinson	250	6	48,300	109,715
Rose Deep	300	7	64,100	91,645
Geldenhuis Deep	420	7	57,290	90,094
New Modderfontein	180	7	52,580	81,765
Robinson Deep	200	5	46,800	82,797
Nourse Mines	260	7	51,800	78,222
Simmer & Jack	320	7	66,300	77,067
Village Deep	180	6	49,000	70,143
Village Main	220	5	31,120	69,123
	4,560	127	1,033,451	1,515,180

GROUP PROFITS.

The following are profits returned for January by the mines controlled by the different groups:—Rand Mines, £206,122; Rand Mines-Eckstein Group, £221,326; Gold Fields, £101,429; Farrar-Anglo-French, £83,223; General Mining, £62,797; Barnato, £59,227; Neumann, £44,280; Consolidated Mines Selection, £21,373; Goerz, £11,860; total, £811,637.

The following is our usual monthly table:—

Company.	Tons Milled.	Stamps.	Total. oz.	Value. £
Aurora West	11,780	60	3,323	14,115
Bantjes Consolidated	22,000	55	8,075	34,300
Benoni*	17,000	45	6,433	27,326
Brakpan Mines	41,060	110	13,919	59,124
City Deeps	37,860	110	14,827	62,981
City and Suburban	27,124	155	11,181	47,494
Cinderella Cons.	16,320	70	5,071	21,540
Consolidated Langlaagte Mines	21,628	140	6,524	27,712
Consolidated Main Reef	15,470	80	5,707	24,242
Crown Mines	148,300	620	60,213	255,769
Durban Roodepoort	14,177	90	3,649	15,500
Durban Roodepoort Deep..	22,685	100	7,747	32,907
East Rand Prop. Mines	164,550	820	57,340	243,565
Do. (Gold reserve)	—	—	17,898	76,026
Ferreira	24,000	80	7,668	32,572
Ferreira Deep	27,750	160	13,659	58,021
Geldenhuis Deep	57,290	420	21,210	90,094
Ginsberg	12,410	80	4,488	11,906
Glencairn Main Reef...	18,861	160	3.779	16,052
Geduld Proprietary Mines	13,360	50	4,198	17,832
Jubilee	—	—	13	55
Jupiter	32,700	75	7,378	31,340
Jumpers—Treasury	9,800	90	3,859	16,392
Knights Deep	58,680	270	12,691	53,908
Knight Central	24,630	110	6,213	26,391
Lancaster	23,000	100	5,502	23,371
Langlaagte Estate	52,754	200	13,339	56.660
Luipaardsvei Estate	16,648	60	4,231	17,972
Main Reef West	13,674	70	5,486	23,303
May Consolidated	13,820	100	4,122	17,509
Meyer and Charlton	14,064	75	6,395	27,164

Company.	Tons Milled.	Stamps.	Total. oz.	Value. £
Midas Deep	2,500	20	650	2,781
Modderfontein "B"	31,100	80	12,340	52,417
New Goch	30,362	120	7,522	31,951
New Heriot	10,410	70	5,234	22,233
New Kleinfontein	38,800	220	14,707	62,471
New Modderfontein	52,580	180	19,249	81,765
New Primrose	22,700	160	7,788	33,081
New Rietfontein Estate	17,149	120	5,087	21,608
New Unified	10,530	60	3,859	16,392
Nourse Mines	51,800	260	18,415	78,222
Princess Estate	14,083	50	4,059	17,242
Robinson	48,300	250	25,829	100,715
Robinson Deep	46,800	200	19,292	82,797
Roodepoort U.M. Reef	28,113	50	7,405	31,454
Rose Deep	64,100	300	21,575	91,645
Salisbury	6,873	55	1,183	5,025
Simmer Deep	44,200	105	9,148	38,858
Simmer and Jack	66,200	320	18,143	77,067
Simmer and Jack Estate	28,700	130	5,560	23,617
Spes Bona Tribute	5,485	40	1,550	6,584
Van Ryn Gold Mines	39,200	135	12,938	54,957
Village Deep	49,000	180	16,573	70,143
Village Main Reef	31,120	220	16,273	69,123
Vogelstruis Estates	10,327	70	2,854	12,123
West Rand Central	2,496	20	912	3,874
West Rand Consolidated	28,800	100	7,882	33,481
Witwatersrand	31,860	220	9,448	40,133
Witwatersrand Deep	38,220	245	11,750	49,911
Wolhuter	29,400	120	9,572	40,659
Miscellaneous Producers	—	—	3,754	15,948
HEIDELBERG—				
Nigel	1,400	75	4,486	19,055
Sub Nigel	3,686	30	1,801	7,663
BARBERTON—				
Barrett	—	—	192	816
Sheba—Rosetta	1,825	20	573	2,404
Sheba	5,750	65	2,715	11,533
Worcester Exploration	4,200	40	1,230	5,225
LYDENBURG—				
Glynn's Lydenburg	3.141	20	1,761	7,480
Transvaal G.M. Estates	—	75	7,132	30,295
KLERKSDORP—				
Miscellaneous Producers	—	—	7,886	33,497

*These figures include gold recovered during preliminary crushing period (15th November to 31st December) as follows: Mill, £10,532; cyanide, £1,214.

"S.A.M.J." ANNIVERSARY NUMBER.

Special Competitions—An Interesting Announcement.

ESSAY COMPETITION.

In connection with the issue of our twenty-first Anniversary Number, which will be published in May next, four prizes, each of £3 3s., are offered for the best essays received on some aspect of—

(a) Mining;
(b) Metallurgy;
(c) Mechanical Engineering;
(d) Electrical Engineering.

One prize will be given for the best contribution received under each of the above headings. Essays must be written with special reference to the mineral industries of the Union of South Africa, Rhodesia, German South-West Africa, Portuguese East Africa, or the Katanga region of the Belgian Congo. They must be of topical and South African interest. A very wide range of subjects is thus open, and it is hoped and believed that many valuable contributions will be submitted. The winning essays will be reproduced in the Special Anniversary Number of the *South African Mining Journal*, and will thus find a place in a production which will be remarkable in the records of South African journalism. The attention of competitors is directed to the following rules of the competition:—

1. Contributions must reach this office not later than March 31st, 1912. They must be addressed: "Anniversary Department, *South African Mining Journal*, P.O. Box 963, Johannesburg, Union of South Africa," and marked "Essay Competition," in the top left hand corner.

2. Contributions must be of not more than 1,500 words in length.

3. It must be distinctly understood that the decision of the Editor and Editorial Staff of the *South African Mining Journal* and of such judges as may be asked to adjudicate will be final and absolute.

4. Under no circumstances can responsibility be recognised for the safe return of manuscripts. At the same time every endeavour will be made to secure their safe return, if a fully stamped and addressed envelope is enclosed.

5. The right is reserved to reproduce in any issue of the *South African Mining Journal* all or any of the contributions submitted. All essays reproduced will be paid for at usual rates.

PHOTOGRAPHIC COMPETITION.

In connection with the same issue a prize of £2 2s. will be given for the best photograph illustrating some aspect of: (a) Mining; (b) Metallurgy; (c) Mechanical Engineering; (d) Electrical Engineering. Photos must be of South African interest and must be of topical value. The winning photograph will be published in the Special Anniversary Number of the Journal.

The attention of competitors is directed to the following rules:—

1. Photographs must reach this office not later than March 31st, 1912. They must be addressed "Anniversary Department, *South African Mining Journal*, P.O. Box 963, Johannesburg, Union of South Africa," and marked "Photo Competition" in the top left hand corner.

2. The size and shape of photos submitted is left entirely to competitors.

3. It must be distinctly understood that the decision of the Editor and Editorial Staff of the *South African Mining Journal* and of such judges as may be asked to adjudicate will be final and absolute.

4. In no case can photos submitted in this competition be returned, and the right is reserved to reproduce all or any photos received in any issue of the *South African Mining Journal* without payment.

In all cases in which photos are reproduced in connection with this competition the name of the photographer will be acknowledged.

CYANIDE of SODIUM, 120 %
ZINC DUST, SHEETS and SHAVINGS.
MABOR FUSION CUPELS and MATERIAL.
3 STAR CRUCIBLES and CRUCIBLE BARS.
3 STAR LITHARGE.
HARDWOOD MINING POLES and SAWING TIMBER.
"BRUNSVIGA" Calculating Machines.

RICHARD HEYMANN & CO.,
73/5 Exploration Buildings.
P.O. Box 1425.
Telephone 381.
Telegrams: "Extra."

THE VILLAGE DEEP BREAKS THE STOPING RECORD WITH

*Extract
from "Star," January 31st, 1912.*

INGERSOLL DRILLS.

Stoping Record on Village Deep.

During the month of December the old stoping record of the Witwatersrand was broken by Miner Charles Nash, on the Village Deep. He, with a crew of eight boys, and four 2¾in. Ingersoll drills, broke 95.2 fathoms and 12 feet of box hole in 104 machine shifts, the average shift being six hours.

The work was done in a stope on the 12th level, depth 2,800 feet, where the rock is hard. Mr. Whitehouse is to be congratulated on the efficiency shown.

Miner Nash and one of the C-110 Drills that made the Record.

C-110

(2¾ in. BUTTERFLY VALVE)

INGERSOLL-RAND

ROCKDRILLS

THE WEEK IN THE SHAREMARKET.

Easier at the Close—Benoni and E.R.P.M. Sagging—Few Features.

Despite Sir Abe Bailey' reassuring utterance and improving labour outlook the market has remained quiet and flat during the week. E.R.P.M.'s have continued to sag, the reasons given being the formal prosecution of the late manager for breach of the mining regulations, and the usual market exaggerations of the amount of fresh capital expenditure necessary. The Benoni business is dealt with in another part of this issue, and it is enough here to say that its effect has been bad for the market as a whole. Other features have been few, the increased excitement in political circles of Capetown, as usual, making for quietness on the market. The European outlook has not brightened during the week, and the better labour returns remain the one bright spot on an otherwise unattractive horizon.

	*	*	*	*		
	Friday, 9th	Sat., 10th.	Monday, 12th.	Tuesday, 13th.	Wed., 14th.	Thurs. 15th.
African Farms ...	16 3	16 0	16 0B	15 9B	16 0	16 3
Aurora West ...	...	7 6B	...	...	...	...
Apex Mines ...	33 6B	31 0B	...	28 0B	30 0B	31 9B
Bantjes Consolidated	24 3B	24 0B	24 9	24 6B	24 3B	24 6B
Benonis	9 0	8 9B	8 0B	7 9B	6 6B	7 0B
Blaauwbosch ...	...	...	16 0S	13 0S	15 0S	...
Bushveld Tins ...	0 7B	0 9	0 7B	0 7B	0 7B	0 8B
Brakpan Mines ...	...	52 0B	...	52 0B	52 0B	52 0B
British S A. ...	...	...	...	27 6B	28 0B	...
City and Suburban ...	49 0	48 6	48 0B	48 0	48 3	48 6
City Deeps	50 0B	50 0	50 0B	50 3B	50 0B	50 0
Cloverfield Mines ...	4 3	4 3B	4 2B	4 0B	4 5	4 3B
Cons. Langlaagtes ...	19 0B	19 0	19 3	18 6	18 9B	18 9
Cons. Main Reefs ...	17 6	17 9	17 9B	17 9	18 6	17 9B
Clydesdales	10 0B	...	...	10 0B	...	10 0B
Coronation Freeholds	0 6B	0 8S	0 7B	0 6B	0 7B	...
Concrete Cons. ...	...	14 0B	...	10 0B	10 0B	...
East Rand Cent. ...	8 0B	8 0B	8 0B	8 0	7 9B	7 9B
East Rand Coals ...	...	2 5B	2 4	2 4B	2 4B	2 4B
East Rand Deeps ...	...	...	...	1 3B	1 9B	...
East Rand Props. ..	61 0	58 6B	59 6	56 0B	57 0B	57 0
East Rand Deb. ...	...	...	...	£94	£94½	£95
Eastern Gold Mines	1 9B	1 9B	...	1 9B	1 9B	1 9B
Govt. Areas... ...	22 0B	22 0B	22 0B	21 9	22 0B	22 0B
Glencoe (Natal) Colls.	...	...	...	6 3B	5 9B	6 4B
Glynn's Lydenburgs	32 6B	30 0B	31 6B	...	32 0B	32 9B
Jumpers	14 0S	10 0	11 0S	10 0B	10 0	10 0
Jupiters	9 0B	9 0B	9 6B	9 6B	9 3B	9 6B
Kaalfontein Diamonds	0 7B	0 7B	0 7B	...	0 6B	0 7B
Klerksdorp Props. ...	3 0B	3 0B	3 0B	3 0B	3 0B	3 0B
Knight Centrals ...	14 6	12 9B	13 6	12 9B	13 6B	13 6B
Lace Props.	2 6B	2 6B	2 6B	2 6B	3 0B	3 0B
Lydenburg Gold Farm	8 3B	8 3B	8 3B	8 4	8 6	8 4B
Main Reef Wests ...	28 0B	27 6B	28 0	27 8	27 9	28 0B
Modder B's	53 3	52 0B	52 3B	52 0B	52 6B	52 6B
Midas Deeps ...	1 1B	1 2	1 1B	1 2B	1 2B	1 2B
Middelvlei Estates...	...	2 1B	2 0B	2 0B	2 2	2 1B
New Eras	6 0B	6 4	6 0B	6 0B	6 3	6 2B
New Kleinfonteins ...	...	28 3B	29 0	28 6	28 6	28 0B
New Rietfonteins ...	11 3B	11 4B	11 3B	11 3B	11 6	11 6
New Heriots ..	...	94 0S	...	...	...	...
New Unifieds ...	19 0S	19 0S	19 0S	19 0S	19 0S	19 0S
New Boksburgs ...	1 3B	1 3B	...	...	1 3B	1 3B
Orange Diamonds ...	1 9B	1 9B	1 9	2 0S	1 9B	1 9B
Pretoria Cement Co.	53 0	52 9	...	51 6B	52 6	52 6B
Rand Nucleus ...	2 9B	2 9B	3 0B	2 11B	3 0B	2 11B
Randfontein Estates	33 9	33 3S	33 3B	33 3B	33 3B	33 3
Rooiberg Minerals ..	26 6B	27 0	27 0	26 0	25 9B	25 6B
Rand Klip	4 6S	3 8B	4 6S	3 9	3 7B	3 7B
Roberts Victors ...	20 0B	...	...	...	...	...
Randfontein Deeps...	4 0S	...	...	...	...	1 6
Ryan Nigels ...	4 0B	4 0B	4 0B	4 0B	...	4 0B
Rand Collieries ..	5 0B	...	...	...	5 0B	...
Simmer Deeps ...	...	3 9	3 0S	3 0B	...	3 3B
South African Lands	4 4	4 4B	4 4B	4 4	4 3B	4 6
S. Randfontein Deeps	2 6B	2 6B	2 6B	2 10B	3 0	3 2
Sub Nigels	...	...	6 0B	...	6 6B	6 0B
S. A. Breweries ...	39 0B	39 6B	39 0B	39 0B	40 0S	38 6B
Springs Mines ...	...	8 3B	8 9B	8 0B	8 6B	...
Swaziland Tins	40 0B	40 0B	42 6	41 6B	41 6B	40 0B
Trans. G.M. Estates	46 3B	45 0B	46 0B	46 6B	44 6	46 0S
Temple Tins	2 6B	2 6B	2 6B	2 6B	...	2 6B
Trans. Coal Trusts...	34 6B	...	34 0S	...	34 9B	34 0B
Van Ryn Deeps ...	7 10B	7 9B	7 9B	...	7 9	7 9B
Village Deeps ...	42 3B	42 0S	40 0B	41 6	41 6B	41 0B
Vogel. Cons. Deeps...	1 3	1 7B	1 6B	1 6B	1 7B	1 7B
Voorspoed Diamonds	...	...	...	...	16 3B	16 6B
Witbank Collieries...	...	42 0B	42 6B	42 6B	43 6	43 0B
Wolhuters	23 3B	23 3	23 0B	23 0B	23 3S	23 3B
Wit. Deeps	46 0	45 6B	45 6B	45 0B	45 0B	45 0B
West Rand Con. ...	...	...	8 6B	8 6B	...	...
Zaaiplaats	63 6	...	67 6	69 0S	65 0	64 9

B Buyers. S Sellers.

INVESTORS' DIARY.

The following company meetings have been announced :—

Feb. 20.—Premier (Transvaal) Diamond Mining Co.
Feb. 28.—East Rand Prop. Mines.
Feb. 29.—Worcester Exploration Co. (Worcester C.P.).
March 6.—Crown Mines.
March 7.—Rose Deep.
March 8.—National Bank (Pretoria); Geldenhuis Deep; Wit Deep; Cloverfield Mines.
March 12.—Durban Rood. Deep.
March 13.—Robinson G.M.
March 14.—Bantjes Con. Mines.
March 15.—Village Deep.
March 20.—City Deep; Lancaster West; May Consolidated; Anglo-French Coal Estates.
March 21.—Ferreira G.M.
March 22.—Modder "B"; Vogel Cons. Deep; Knight Central.
March 26.—Cassel Coal Co.
March 27.—Rand Mines; Modder Deep Levels; Princess Estate; Geduld Prop.
March 29.—Simmer Deep; Jupiter.
April 12.—Transvaal Consolidated Lands.
April 25.—Wit. Deep; Knight Central; Wolhuter; Treasury; Consolidated Main Reef; Main Reef West; Witbank Colliery; Vogelstruis Consolidated Deep; Cloverfield (Extraordinary General Meetings).
April 30.—New Era; Springs Mines; Brakpan Mines, Transvaal Coal Trust.
May 17.—Wit. Deep; Knight Central; Wolhuter; Treasury; Consolidated Main Reef; Main Reef West; Witbank Colliery; Vogelstruis Consolidated Deep (Extraordinary General Meetings).
May 22.—Apex Mines; New Kleinfontein.
May 23.—Benoni Consolidated.

Olga G.M. Syndicate.

The Olga Gold Mine, Barberton, together with digger's claim No. 33,492 and four prospecting claims 33,493, 33,494, 33,495, 33,496, the whole of the machinery, buildings, stores and a practically new and complete assay plant, were sold by Messrs. Arthur Meikle and Co., this week, the whole realising £150.

It is not surprising, remarks the *S.A. Journal of Science*, that, concurrently with the spread of the latest ideas on elemental change, there should be instances of reversion to the utilitarian phases of alchemistic thought. A patent has recently been granted for "a new process of treating iron to obtain gold and silver by transmutation."

Engineering Notes and News.

Resuscitation from Electric Shock.

The *Electrical World* announces that a Committee has been appointed to carry out a thorough study of methods of resuscitation from electric shock, and to prepare a set of rules for their application. The Committee includes members of the American Medical Association, the National Electric Light Association, and the American Institute of Electrical Engineers. It is suggested that the scope of the inquiry will be made international in character. The rules will be issued by the National Electric Light Association.

Rand Engineering Progress.

The Special Commissioner in South Africa of "African Enginering," writing under the heading "A Retrospect and Some Deductions," says, *inter alia*: — Among men of means the topic is not so much this mine or that venture, but the development of the whole country on sound and economic lines. Not that mining has waned—it still holds its own as the premier industry of the Transvaal, but not, fortunately, the only one, as in other days. Almost every man with money has his bit of land, or his farm, outside—sometimes very far outside and sometimes close by—with the stocking and tilling of which he is interested. Merchant engineers are no longer confined to mining houses as their only customers. The Government has encouraged agriculture, and the huge railway system, now under one control, is devoted to rendering farming possible in the remotest parts, and the facilitating of the marketing of produce. These things have led to a large and quickly increasing demand for fencing, agricultural machinery, flour mills, etc., to such an extent that some of the houses which before only catered for the mines are now finding their best and most profitable markets among the farming community. This article is merely intended to point the trend in this direction. Other opportunity will be taken to particularise. But it is abundantly evident that the whole of South Africa, and particularly the Transvaal, is on the eve of phenomenal progress compared with which even its astonishing past will be considered as nothing. The possibilities of the maize trade have been shown, mainly by the efforts of Sir Thomas Price, and this has given an impetus to farming, the effect of which will be permanent and far-reaching as the veld itself. Let it be said before leaving this subject that for the last year, while the community has increased by some 15 per cent. to 20 per cent., the importation of wheat and flour have decreased by even a greater percentage, and these figures are being accentuated every month, and some idea of the change referred to will be obtained. And all this is new, while the mines hold on their way with undiminished returns, and a constant demand for stores and machinery which is ensured for half a century to come. Such towns as Chicago and Winnipeg show the possibility of agriculture unaided by mining, and there is every evidence that the land here is as bountiful as that in any country on the globe. But with the initiative given by mining and the permanent help it must long afford the possibilities of South Africa are so stupendous that it would be difficult to overestimate them.

The Electrical Problem.—When I was last here the main topic was the electrifying of the Rand, and it was confidently hoped that a good share of the orders to be placed in connection with the big power schemes then in hand would go to British firms. As a matter of fact, all the orders, with the exception of the boilers, went to the Continent, and but for the supreme suitability of the new Babcock boiler to the unique conditions prevailing here there can be little doubt that boilers as well would have been ordered from foreign makers. This, in face of the fact that a good deal of the capital of the Victoria Falls Power Company is held in England, may seem strange, but the fact is that German banks supported German firms in the final effort to such an extent as to render what British influence there was impotent in the matter of orders.

Mooifontein is now a centre of some importance. At present, of course, everything is done by hand, and consequently the maker of hand tools is the only manufacturer who has found it a market for his products. Unquestionably, however, before long there will be a demand for the simpler types of mining machinery and the necessary motive power for driving it. This in most cases, I gather, will be internal combustion engines, either of the oil or suction gas types.

PRACTICAL DEMONSTRATION
OF THE WORKING OF
"SISKOL" HAMMER- STOPE- Drills
Will be given at the Mining Exhibition
now in progress at
The S.A. School of Mines, Eloff Street.

International Channelling Machines, Ltd.,
(INCORPORATED IN ENGLAND)
2 & 3, TRUST BUILDINGS, JOHANNESBURG.
Phone 2643. Telegrams "SISKOL." P.O. Box 1382.

THE STANDARD ANTI-FRICTION METAL OF THE WORLD
MAGNOLIA METAL
FLOWER BRAND. FLOWER BRAND.
TRADE MARK. TRADE MARK.
MAGNOLIA ANTI-FRICTION METAL
FACSIMILE OF INGOT.
TO PREVENT IMPOSITION SPECIFY "FLOWER BRAND."
THE MAGNOLIA ANTI-FRICTION METAL CO. OF GREAT BRITAIN L^TD
49, QUEEN VICTORIA STREET, LONDON, E.C.
Sole Agents for South Africa: MESSRS. FRASER & CHALMERS, L^TD JOHANNESBURG, BULUWAYO AND SALISBURY.
BEARING METALS TO SUIT ALL CONDITIONS SUPPLIED. CATALOGUE SENT POST FREE.

The "Humphrey" Pump for Marine Propulsion.

A short article having appeared a few weeks back, dealing with the advantages of the "Humphrey" Pump, which has been placed on the market out here for irrigation schemes and the like by the Sandycroft Foundry, it may be of interest to refer to a short article that appeared in *Engineering* some time back, on the question of the "Humphrey" Pump for Marine Propulsion.

"We are not sanguine that it will prove feasible to apply successfully any known form of pump to ship-propulsion on the water-jet system. Should, therefore, the 'Humphrey' internal-combustion Pump prove as economical for large outputs as it has already done in the smaller sizes, it seems probable that any attempt to adopt it to ship propulsion will take the form of using the discharge from the pump to drive a turbine, and let the latter drive an old-fashioned screw. The advantage of such a method lies in the fact that the volume of water on board at any time might be very moderate in quality. The losses on getting it on board, which are a proportion of the head corresponding to the ship's speed, are thus minimised, and a compact and relatively efficient plant should result. It may be objected that this system is complicated, but occasionally the 'longest way round' is really the 'shortest cut.' An internal combustion pump will not be applied to marine propulsion unless its own efficiency is so high that a substantial saving of coal be effected. The problem to be solved is, in fact, two-fold. In the first place, it is necessary to have an efficient means of producing power, and in the second, an efficient method of utilising it. With jet propulsion pure and simple the two elements of the problem make incompatible claims. Owing to considerations to weight and cost, efficient pump means in practice an inefficient jet and *vice versa*. If, however, a high pressure 'Humphrey' Pump can be designed which will yield one H.P. at, say, 25 per cent. less fuel cost than a good marine engine requires to develop one (1) shaft H.P., the combination of turbine and screw becomes a commercial proposition, and the plan of effecting the ultimate propulsion by a jet can be dismissed."

Shaft Station Guards.

With the increasing depths of Rand shafts it becomes more and more necessary to safeguard employees travelling to or from their work or waiting at stations for skips, a few words regarding shaft station guards in America may therefore be of some interest here. At the stations of the inclined shafts in the Michigan copper district many different kinds of guards have been tried. At some shafts a wire rope or a light chain is used having a hook at its end that fastens to a ring carried by a post at the hanging-wall side of the shaft. It is an unhandy device, as the men have to go clear over to the foot wall, stoop down and pick up the chain each time to put it across the shaft opening. At other inclines the shaft bar that is in common use at vertical shafts has been copied. Owing to the length that this guard arm must have at the inclines, and its weight, a counterweight is sometimes arranged to make the lifting of the arm easier. A nail driven into the post that carries the stop on which the guard arm rests holds the arm out of the way, when it is raised and a car is being dumped. A guard arm is handier than a chain, but the best form of bar for the inclined shaft stations consists of a ¾-in. iron rod that is bent at each end so as to have arms 14in. long with eyes in them that hook into an eye-bolt that is fastened into the two posts of the fence that is built around the shaft at the station. These posts are about 3½ ft. high, and the eye bolts are placed about 7in. from the top, and extend out from the posts about 3½in. Therefore when the guard is turned up so that a car can be dumped into the skip it rests against the top of the posts and will not jar down easily. As soon as the car is dumped the bar is given a push so that it swings down to prevent any car being pushed into the shaft.

The directors of the Kowie Railway Company, Limited, have returned from Capetown to Grahamstown. It is understood that they had a successful interview with Mr. Sauer, and it is believed there is every prospect of the line being acquired by the Government.

HIC TRADE MARK.
H. INCLEDON & Co., Ltd.
(Head Office, Birmingham: Registered in England.)
Telephones 1911 and 1912,
P.O. Box 3620,
JOHANNESBURG.
ALL SIZES OF
PIPING, AND FITTINGS,
VALVES, Etc.
FROM ¼″ TO 18″ KEPT IN STOCK.

Finance, Commerce, and Industries.

An Extending Trust Co.

The South African and General Investment and Trust Co., Ltd., announce that a branch office has been opened for the Province of Natal, in Natal Trust Buildings, West Street, Durban. The company has absorbed the Natal Trust and Finance Co., Ltd., which for several years carried on an extensive trust and general agency business in Natal.

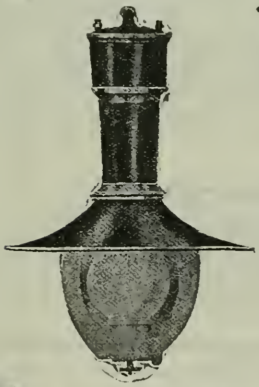
* * * *

A New Flotation.

We have received a prospectus of Kinemacolor (South Africa), Limited (incorporated under the Companies' Act, 1909). The capital is placed at £15,000, divided into 15,000 shares of £1 each, distributed as follows:—To the vendor in shares, £4,000; issued to provide £3,000 for the vendor in cash, 3,000; issued to provide £8,000 working capital, 8,000; total, £15,000. This payment of £7,000 in cash and shares to the vendor is the consideration to be paid by the company to the vendor in exchange for the cession by him of his rights to the company. Eleven thousand shares are now offered for subscription at par. The prospectus adds: "The enormous development of the bioscope business all over the world is now so well known to the public that it is unnecessary to dilate upon the profits to be obtained from a successful departure in such an enterprise and the introduction of the wonderful invention of 'Kinemacolor' which it is confidently expected and asserted will entirely take the place of the exhibitions of black and white pictures. 'Kinemacolor' is the latest and most perfect phase of Kinematography, the only process in existence showing motion pictures in the actual tones, tints and hues of nature." The company starts with a strong provisional Board of Directors, seems to be fairly capitalised, and should prove a good investment.

Town Hall Tender.

At a special meeting of the Town Council this week, the Finance Committee submitted its report in regard to the recommendations of the Town Hall Special Committee, who recommended the acceptance of the tender of Mr. M. C. A. Meischke. The Finance Committee stated: The sum previously voted for the purpose of the Town Hall was £236,241. The estimate for the completion of the work in accordance with the tender of Mr. Meischke, subject to the deductions of £30,650, is £308,713. There is, therefore, to be provided to carry out the work as proposed, the sum of £72,472. There is available to meet this deficiency the sum of £13,700, made up as follows:—Estimated value of municipal offices redemption fund at 31st August, 1914, less £21,200 already accounted for, £3,800; estimated value of furniture depreciation reserve at 31st August, 1914, £8,000, less £7,100 already accounted for, £900; estimated amount recoverable from hoarding fees to 31st of August, 1914, £6,300; special depreciation provided on present offices, £2,700; total, £13,700. We approve of the expenditure involved, and propose to provide for the balance, viz., £58,772, during the years the work is proceeding. We recommend: (a) That an additional sum of £13,700 be voted to meet the capital expenditure of the Town Hall and Municipal Offices and accessories. (b) That the Council vote an additional sum of £58,772 for this purpose, subject to the sum being provided as and when required. The matter was not dealt with this week, in consequence of the provision of the Finance Regulations, under which it is necessary for the report to lie on the table seven days before the Council can be asked to vote on the subject.



THE JANDUS LAMP
(REGENERATIVE)
Revolutionizes Electric Lighting.

A COMPARISON —

	Metallic Filament.	JANDUS Regenerative.
WATTS	600	400
Candle Power	500	2000

The Special Carbons, burning in an air-tight enclosure, cost less per hour than Metallic Filament Lamp Renewals.

SOLE AGENTS—
WESTERN ELECTRIC CO., LTD.
(Incorp. in England).
17, STANDARD BANK CHAMBERS,
JOHANNESBURG.
'Phone 2118. Telegrams: "MICROPHONE."
P.O. Box 1571.

Stock Exchange Values.

In its customary article on "Stock Exchange Values," the *Bankers' Magazine* states that business in public securities during last month has been comparatively slack in the main departments, interest, in fact, having chiefly centred in some of the miscellaneous speculative descriptions, where some considerable gains have occurred. In consequence, however, of the fairly substantial decline which has occurred in a few leading sections the usual list of representative stocks shows a decline of about eight millions, the exact figures being as follows:—Aggregate value of 387 representative securities on 19th December, 1911, £3,611,462,000; ditto, 20th January, 1912, £3,603,368,000, a decrease of £8,094,000. Thanks to a certain amount of support from the Sinking Fund, Consols have hardened a little during the month, and some other "gilt-edged" stocks have benefited a little by reinvestments of the January dividends. On the other hand, Foreign Government securities show a fairly substantial decline, though, in this case, considerable allowance has to be made for the deduction of quarterly and half-yearly interest from quotations.

* * * *

Nyasaland Railway.

The Colonial Office announces, with reference to the proposals which have been made for securing for the Nyasaland Protectorate an outlet to the sea, that the Imperial Government has provisionally approved of the Protectorate Government's entering into an agreement with the British Central Africa Company, whereby the Protectorate Government will purchase public lands, to which the Shire Railway is entitled, and guarantees interest on the capital required to extend the railway to the Zambesi. The Portuguese Government has been asked to consent to the passage of the railway through Portuguese territory. Simultaneously with the construction of the railway being arranged for through the Mozambique Company's territories from Beira to a point on the Zambesi, opposite the terminus of the Shire extension of the railway, the agreement with reference to the northern section of the railway is dependent upon the construction of a section between Beira and the Zambesi.

* * * *

Railways and Harbours.

A "Gazette Extraordinary," published under date December 30th last, contains the text of the Railways and Harbours Management Bill to be presented to Parliament next session. The text, printed in the English and Dutch versions, fills thirty-three closely-printed pages. The Bill repeals in whole or in part a total of 203 Acts passed by the late Colonies in respect to railway and harbour administration, Natal coming first with an aggregate of 98 statutes "scrapped"; the Cape next with 90, and the Transvaal and Free State with only eight and six, respectively. The Natal Acts repealed include Private Law of 1859, "Incorporation of the Natal Railway Company," Law No. 4, of 1875, "The Natal Government Railways Law, 1875"; Law No. 18, of 1876, "To enable the Colonial Government to acquire, work, and maintain certain railways between the Point and Durban, and Durban and the Umgeni"; and Law No. 3, of 1878, "To provide for the employment of locomotive engines on the Natal Government Railways." The defining clauses exhibit little material difference from the existing form, but it is provided among other things, that the Administration shall have power to control, manage, and superintend all harbours, docks, or other similar works within the Administration's jurisdiction, the ships, goods, and persons arriving at or departing from the same, and the persons working or otherwise engaged therein or thereon; and, if deemed necessary, to limit the right to land, warehouse, deliver, or ship any goods within any harbour. To land, ship or tranship goods within any harbour, and to warehouse, deliver, and collect any such goods, either by itself or its duly-constituted agents; or to grant the right to do all or any of those acts exclusively to any person. While a further clause reads: "To differentiate in the charge for wharfage dues on goods imported into a harbour between goods so imported by persons who contract to have all their goods transported by the railway between points where in the opinion of the Administration there is competition between the railway and any wagons or other vehicles, and goods so imported by persons who do not so contract; and to collect such difference in wharfage dues from any consignee of such goods so conveyed by wagon or other vehicle: Provided that schedule of such points and any regulation providing for returns to be made by merchants for the purpose of carrying into effect the powers in this paragraph contained shall be submitted to Parliament during the first week of each session."

Contracts Open.

The Chairman of the Union Tender Board, P.O. Box 371, Pretoria, invites tenders for the printing of the Orange Free State-Kimberley Telephone Directory (Feb. 21); also for the printing of books, pamphlets, and parliamentary reports, for a period of three years from the 1st of July, 1912, to the 30th June, 1915 (March 6); also for the supply of account books for a period of three years from the 1st of July, 1912, to the 30th June, 1915 (March 6).

The Chairman of the Tender Board, Attorney-General's Office, Pietermaritzburg invites tenders for the erection of a bridge of two spans of 40 feet each on masonry abutments and pier over the Umhlouyana Spruit, Newcastle Division, Natal, erection of a bridge of two spans of 40 feet each on masonry abutments and pier over the Klip Spruit, Newcastle, Natal, erection of a bridge of two spans of 30 feet each on concrete abutments and pier over the Umlalazi River, Eshowe Division, Natal (March 11).

The Engineer-in-Chief, S.A.R. Offices, Johannesburg, invites tenders for the following work on the Zeerust-Buhrman's Drift Railway: (1) Certain earthworks in the approaches to the proposed railway bridge over the Malmani River at Ottoshoop, in extent approximately 1¼ miles; (2) For the erection of the concrete abutments of a 20-metre span bridge over the Malmani River (Feb. 27).

The Secretary of the Tender Board, Headquarter Offices, S.A.R., Johannesburg, invites tenders for earthworks in connection with the removal of the material between the retaining walls of the Braamfontein subway (Feb. 20).

The Town Clerk of the Municipal Council of Salisbury, Rhodesia invites tenders for the supply and delivery of: (a) Mild steel tubes, special castings; (b) Sluice, air, reflux and equilibrium ball valves, expansion joints, hydrants and surface boxes, joint rings, bolts and washers; (c) meters (d) Galvanised wrought iron pipes and fittings; (e) Lead; and (f) Yarn (March 11).

The Municipal Council of Johannesburg invite tenders for Specification No. 75: For the supply and erection, including foundations, at the President Street Generating Station site, of one steel boiler and economiser house and coal conveying plant (April 9); also for Specification No. 76: For the supply and delivery of one centrifugal pump of a capacity of 30,000 gals. per hour, and motor (Feb 26); also for printing of: (1) The agenda and minutes of the Council; (2) The Municipal statistics (Feb. 19); also for the supply of bicycles, uniforms for natives, bitumen, earthenware, troughs and porcelain bridges, graphite and galvanised water piping and fittings (Feb. 27).

The Division Officer, R.E., Roberts Heights, invites tenders for the supply of 200 yards cube of tan (Feb. 20).

The South African Railways Administration has accepted the tender of Mr. P. Jorissen, Johannesburg, amounting to £1,918 2s. 2d., for the Siemert Road bridge.

The Benoni Municipality invites tenders for the supply and delivery of certain fire appliances (Feb. 21).

The Municipal Council of Krugersdorp invites tenders for the erection of a fire-proof curtain for the stage of the Town Hall (Feb. 27).

Johannesburg Motor Garages and Suppliers of Motor Cars, Accessories, etc.

JUST ARRIVED—1912 MODELS

PHŒNIX AND VULCAN CARS

Trial Runs Arranged. Full Particulars from

REED'S GARAGE

GOVERNMENT SQUARE, JOHANNESBURG.

Phone 1434. P.O. Box 2720.

Dunlop Repair Shop

SEND YOUR TYRES FOR REPAIR OR RETREADING

TO THE

MANUFACTURERS.

DUNLOP GROOVED TREADS (manufactured in our English Factory) Fitted to any make of cover.

Burst Covers and Tubes properly repaired.

Call and inspect samples of our work.

Dunlop Repair Works

83, BREE ST.,
JOHANNESBURG.

P.O. Box 6370.
'Phone 831.

The A.B.C. of Advertising

A. A GOOD **ARTICLE** TO ADVERTISE.

o

B. A GOOD **MEDIUM** TO ADVERTISE IN.

o

C. A GOOD **DISPLAY** OF ADVERTISEMENT.

o

You Supply the Article: We will give you the Medium and Display!

The South African Mining Journal

is the ONE MEDIUM through which THE BUYERS for SOUTH AFRICA'S GREATEST INDUSTRY may be SAFELY REACHED.

SUBSCRIPTION ORDER.

Date..

The South African Mining Journal,
P.O. Box 963, Johannesburg.

Please enter my name as a subscriber for *The South African Mining Journal.* I remit herewith........................ in payment for one year, commencing...............................

Name ....

Address ....

Subscription Rates.

Oversea, £2. South Africa (by post), £1 10s. Local delivery, £1 6s.

*Back numbers, when available, will be sent if required.

First and Fastest "Hill Climbs" 1910.

First and Fastest "Hill Climbs" 1911.

VAUXHALL CARS.

Sole Agents:

T. B. ADAIR & CO.,

67, Kotze Street,
HILLBROW,
JOHANNESBURG.

Phone 2870.
P.O. Box 1940.

Automobile Notes.

The Automobile Show.

Probably one of the best methods which can be adopted o conserve and promote the interests of the motor industry n these parts is made possible through the medium of an xhibition consistent with the wonderful progress attained, nd those responsible for the forthcoming automobile show, o be held in conjunction with the Agricultural Society's nnual exhibition, need scarcely be reminded of the imnense importance which attaches to an affair of this nature, rom an educative and many other standpoints. The promoers should, therefore, from the outset endeavour to make the how as representative as possible, as success can only be ssured along this line. Agencies for many of the leading nakes of British, American, and Continental cars are fairly vell established in Johannesburg and other places, and if dvantage be taken of the opportunity afforded by an exibition, having respect to the fund of material at disposal, here is every reason to believe that a real interest can be wakened in the various communities in regards to things utomobile. Arrangements are being discussed at present or the housing of the various exhibits, accommodation of his nature being limited, but exhibitors need not in any way e deterred on this score, as ample and suitable provision vill be forthcoming for all classes long before the advertised late of the opening of the show.

A Callous Motorist.

The motorist community condemn in the most emphatic vay the callous behaviour of certain occupants of a car being lriven rapidly along the Pretoria Road early this week, who ire alleged by the Press to have knocked down a cyclist, injuring him, in addition to wrecking his machine, and leaving him to his fate. If the published reports of the affair are correct, and there is every reason to believe such is the case, t is something out of the ordinary run of regrettable deprelations, with which the motor-hog is usually credited, by the fact that a lady was at the wheel of the offending car, while it is further reported that two male escorts also occupied seats in the vehicle, who are equally culpable in evading the responsibility arising for the rash act. It seems that it is not altogether superfluous to remark, in the light of this episode, that the rendering of aid in distress is among the elementary dictates of humanity, but the non-observance of such, especially by those responsible for the misfortune caused, reflects so discreditably on motorists in general as to further deep-root the unwarranted prejudices which already exist against this body, and which on analysis owes its origin to despicable conduct practised by a very insignificant minority in the motorist ranks, but still sufficient to exasperate the public to a dangerous degree. It is to be regretted that the identification number of the car in question was not ascertained, else the sequel might have been determined in the police courts after exemplary fashion. It is not always an easy matter, however, to collect substantial evidence in cases of motor accidents, particularly when the car involved drives off the scene immediately, as in the case under discussion ,the attention of onlookers being invariably diverted from the car to the victim of the happening, while the "scorcher," if so inclined, can make escape undetected.

Petrol Prices.

Complaints have been made in regard to the high prices ruling for petrol in many towns in South Africa, and these are by no means without justification. Johannesburg is not altogether exempt in this respect either, and, therefore, with a view to standardising prices as far as possible, the South African Society of Motor Traders are bringing their influence to bear on their members to this end. In remote places, however, the motorist must still be prepared to pay fancy prices for the commodity, and no remedy suggests whereby this seeming imposition may be counteracted, other than the development of the Union, which process must eventually effect sweeping reforms, even in apparently such minor details, which at present merely affect the actual motorist. The motor industry is yet to be established in outlying towns and districts, where its future is assured directly the utility of the car is recognised. When the reforms referred to will be widely appreciated as the industry develops.

Mulder's Drift.

Motorists who patronise that favourite week-end resort, Mulder's Drift, will be pleased to learn that a movement is on foot for the renovating and possible macadamising of the route—the major portion of which now lies very much in disrepair—which passes from Johannesburg, via Auckland Park, to Melville, through Windsor township, from thence through Mr. Dale Lace's farm, and bearing to the left brings the visitor to the drift. By this route the journey from

CONTINENTAL

THE WORLD'S LEADING TYRES.

FOR MOTOR CARS:

The Extra Heavy Square Tread Tyre;
The Tropical Renforcé Three Ribbed Tyre;
The Black Red Steel Studded, as used exclusively during the "Prince Henry Trophy" Race.

FOR MOTOR CYCLES:

The Extra Heavy Tyre, Ribbed Pattern;
The Rubber Studded, Non Slipping Tyre.

N.B.—All our Tyres are specially manufactured by our Home Company to suit the South African Climate and Roads, and stand UNSURPASSED in Quality.

STOCKS OBTAINABLE THROUGHOUT SOUTH AFRICA.

Johannesburg is lessened by some twelve miles or more, than is possible when one travels via Krugersdorp. Even at the present time, despite the crude conditions which this roads present, large numbers of motorists frequent it for the simple reason of the saving in mileage effected. This short cut, under altered conditions, will serve to popularise, in addition to Mulder's Drift, the other charming resort, Henley-on-Klip, some distance beyond.

Dangers of the Wind-Screen.

The danger of the wind-screen was deplorably exemplified in a terrible accident, which occurred some little time ago in the Irish capital, resulting in the death of a young artist. The car in which he was travelling pulled up suddenly to avoid a collision with another vehicle, with the result that the unfortunate man was hurled from his seat with tremendous force against the glass screen, sustaining such injuries to the throat that death ensued in a few minutes. Mention is merely made of the incident, by way of illustration, as accidents of this nature are liable to befall any motorist; though the half screen arrangement is not productive of so much risk. Accidents, in regards to fatal ending, for which the wind-screen may be said to be responsible, are happily very rare, but serious injury to the person in the past to this cause has been attributed, in collisions. Apart from this specific danger there is always the risk of damage being done through missiles of various kinds thrown at cars by the small boy invariably, and such are by no means uncommon occurrences in Johannesburg; and school teachers might be reminded of the seriousness of the habit peculiar to pupils using tram cars, who pelt passing motor cars, and other vehicles, from pockets replete with acorns. This missile may seem very trivial, but flung with sufficient force from the top of a tram car on the flat surface of a wind-screen of a motor travelling at a fair rate is quite sufficient to break the glass, with possible serious results to the occupants of the car.

Overland Cars.

Wonderful progress continues to be made by the American motor car industry. What is said to be the biggest foreign shipment of American motor cars ever made at one time is a train load of 30 flat freight cars containing 90 Overlands, which left Toledo, Ohio, for New York on Friday, December 22, over the Lake Shore and New York Central Lines. Western railroad officials say that it is the largest foreign shipment ever handled by them since the inception of the industry in America. This trainload of Overlands is distinct from the regular foreign shipments which leave Toledo each week for foreign lands. The countries to which the cars were shipped and the number to each are:—Australia 33, New Zealand 15, Tasmania 3, South Africa 2, Brazil 2, Holland 2, Porto Rico 7, Uruguay 5, Peru 2, England 17, and Phillipines 2. When the Overlands reached New York they were transported to eight different steamers on which the Toledo-made motor cars were carried to the eleven foreign countries. Each car was knocked down and crated. The President of the company says that this is only the first of a series of big shipments which will be made to nearly every civilised country of the world.

New Patents.

64. Thomas Arthur Binks.—Improvements relating to beds.
65. Arthur Loftus Bethell.—Improvements in sand paper and abrasive materials.
66. Frolich and Jansen.—Pole Ladder.
67. Edmund Charles Pym Allardyce.—Improved fittings for ensuring the removal of the entire contents of slop tanks, and other receptacles for storing liquid matter.
68. Valetin Jancec.—Improvements in apparatus for lashing or removing broken rock, ore, material or the like from the stopes or underground workings of mines or the like, applicable also for the construction of dams and other similar purposes.
69. Joe Abrahams.—Improved Patent Acetylene Gas hand lamp.
70. Thomas Pearson Smith —Improvements in interlocking means for the brake and clutch gears and winding and like engines.

"SHELL"
MOTOR SPIRIT

IS USED EVERYWHERE
BECAUSE IT IS
CLEAN AND ECONOMICAL.

THE SOUTH AFRICAN

Mining Journal,

WITH WHICH IS INCORPORATED

The South African Mines, Commerce and Industries.

ESTABLISHED 1891.

VOL. IX., PART II.] FEBRUARY 24, 1912. [No. 468.

HEAD OFFICE: 119-126 Exploration Building (3rd Floor).

Telephone **913.** P.O. Boxes **963** and **418.**

Cable and Telegraphic Address: **"MINING JOURNAL."**

LONDON EDITOR AND MANAGER FOR GREAT BRITAIN: Percy Snowden, c/o National Bank of S.A., Ltd., Circus Place, London Wall, E.C., to whom all communications must be addressed.

GERMAN AGENTS: Arthur Dean, Schellingstr 1, Berlin. W., 9; Rudolf Mosse, Jerusalemer Strasse, 46-49 Berlin, S.W. 19; H. C. Wolff, Residenzplatz, M. 85. Kempten, Bavaria.

AMERICAN AGENTS: Gotham Advertising Company, 95 Liberty Street, New York.

ANNUAL SUBSCRIPTION RATES: Oversea, £2; South Africa (by post), £1 10s.; Local Delivery (Town only), £1 6s.

Copies of this journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Office as above.

NOTICE.—The postage of this issue of the *S.A. Mining Journal* is: South Africa, 1½d. All other parts, 2½d.

CONTENTS.

PAGE
Notes and News 887
Topics of the Week:
    Diamonds and Tact 890
    Mine Accidents 889
    Rand Mine Managers' Views 890
Shortcomings of the Full Mill Policy 891
Zaaiplaats and Rooiberg Prospects 892
Coal Mines of the Transvaal: I.—The Witbank Colliery 893
Government Aid for the New Steel Works 896
The Deepest Workings of the Central Rand 897
The Further West Rand 898
Rand Mine Managers in Conference 899
Progress in Cyanidation of Gold and Silver Ores during 1911—III. 901
Premier (Transvaal) Diamonds: Results at a Glance ... 902
Recent "T.C.L." Activity 902
The Geology of the Rand—II. 903
Mining Men and Matters 904
The Manufacture of Steel in South Africa from Scrap 905
Latest from River Diggings, ... 906
Government Mining Engineer on Mine Accidents ... 907
More Light on the E.R.P.M. Position 908
Rand Labour and Health Questions 909
Correspondence and Discussion: "The Water Cure for the Dust Evil" 909
Quarterly Reports 910
Rhodesian Section:
    Latest Mining News 911
    Mining in the Hartley District 912
The Week in the Sharemarket 913
Engineering Notes and News 915
Finance, Commerce and Industries 917
Automobile Notes 921
Index to Advertisers.

Notes and News.

1911 Diamond Output.

Quite the most interesting feature of the Government Mining Engineer's returns issued this week is the detailed output of diamonds for 1911. Apparently the Premier Mine (including a trifling output from two other producers in the Pretoria district) produced some 1,802,092 carats, valued at £1,302,422; and the Voorspoed district per carat being 15s. 10d. The production of alluvial stones from the river diggings in the Transvaal amounted, for the year, to 38,142 carats, valued at £196,602. The Kimberley contribution was 2,166,944 carats, valued at £5,019,386, but of this £52,026 represented alluvial production in that district. The Barkley West output was 78,661 carats, valued at £466,170. The Jagersfontein district produced 462,370 carats, valued at £1,302,422; and the Voerspoed district gave 242,145 carats, valued at £210,602. The grand total of stones produced in the Union of South Africa in the whole year 1911 was 4,891,998 carats, valued at £8,746,724. How the value of the output has increased as a consequence of the improved diamond market is shown by the fact that though in the half year ended December, 1910, there were produced 3,043,447 carats, the value was only £4,547,809.

* * * *

January Copper and Tin Statistics.

The year opened well in the Transvaal base metal industry. From the Government Mining Engineer's returns for January we learn that 234 tons of tin concentrates were shipped, valued at £26,682, which is almost as good as the November export of last year. Copper concentrates shipped in January were valued at £4,453, which is well up to the 1911 average.

* * * *

Central Minings.

It is announced that the Central Mining and Investment Corporation, Ltd., has decided to pass the dividend for the second half of the year. The profits for the eighteen months covered by the accounts would have permitted the distribution of a final dividend, but the board considered it advisable to devote the greater portion of such profits to abnormal depreciation. The directors assure the shareholders that on the basis of the market quotations at the end of December, 1911, the assets of the Corporation, after allowing for all liabilities, more than represent the capital.

* * * *

Further Government Enquiries?

South Africa has gained a reputation for commissions of recent years. We have had Government instituted enquiries into almost every conceivable phase of politics and industry, from the intricacies of townships titles to the native labour situation, and from the state of the Civil Service to the working of a gold mine. The Commission which enquired into the affairs of the East Rand Proprietary Mines has not long finished its labours, and already rumour has it that the Government is about to institute an enquiry into the working of two other important Transvaal mines and into such circumstances affecting the companies concerned as share market dealings and methods of administration, etc. Whether such investigations are called for or not is not for us to say at the present. As yet we know of little of a definite nature in connection with this matter, but should the report which reaches us be true further important disclosures in South African mining may be expected.

* * * *

A New Colliery.

We understand that the Transvaal Coal Trust Co. have commenced operations in connection with the opening up of a new colliery in the Middelburg-Witbank coal field. Boring operations are proceeding, and it is understood that a promising seam of coal has been located. It may be recalled that the Coal Trust Co. have hitherto operated two collieries —the De Rietfontein near Brakpan, and the Oogies about 16 miles from Witbank.

Bay Tree Syndicate.

Prospecting operations on the claims of the Bay Tree Syndicate, the largest syndicate now engaged on Appingendam, have been temporarily suspended. A director of the syndicate is on his way from England to inspect the property, where some promising ore bodies have been found, and it is expected that financial arrangements will then be made on a scale sufficient to admit of further extensive work.

* * * *

The Mining Exhibition.

The mining exhibition continues to attract big attendances. An interesting demonstration of the Pneumatogen Rescue Apparatus was given during the week. Further demonstrations of this and other rescue appliances will be given on Saturday afternoon and evening. Siskol Rock Drills will be shown working under practical conditions on Saturday afternoon from 3 to 5, and, at the same time, the sprays in use in the drives of the Robinson Deep Mine, and the National Suction Gas-engine will be in operation. Interesting additions to the exhibition this week are: Michell's Patent Pick with detachable point; a new dust-catcher by Mr. J. Michell; and the dust-catcher recently tried at the City and Suburban Mine by the two Kimberley men—Messrs. Eykelenboom and Coles.

* * * *

Portuguese Cocoa Labour.

Particulars have reached London from Lisbon of the measures proposed to be taken by the Portuguese Government for the relief of the labour shortage on the cocoa and other plantations in the Sao Thome Islands. The idea of recruiting labour from Mozambique has had to be abandoned, it appears, owing to the preference of the natives for work in the gold areas in South Africa, where wages and general conditions are much more in their favour than in the cocoa industries. The authorities were reluctant again to call on reserves in Angola, owing to the abuses which formerly obtained; but this reluctance they have now overcome, with the proviso that all contracts shall be witnessed by Government inspectors, and that after two years' service the natives shall be compulsorily repatriated. The progress of the experiment, however, will be watched with interest.

* * * *

Our London Office.

We greatly regret that Mr. G. Leighton Hare has been compelled, by ill-health, to relinquish his position as London Manager of this journal. There is, happily, reason to hope that Mr. Hare will be permanently benefited by the operations he has undergone, and will again be able to take part in active affairs. Mr. Percy Snowdon has now taken up the duties from which Mr. Hare has found it necessary to retire, and in addition to which Mr. Snowdon will act as the London Editor of this journal. New offices are being taken, and the address will be announced in a later issue. Now that Mr. C. G. Gall, lately of our London office, has returned to South Africa, we wish it to be distinctly understood that he has no authority to canvass for advertisements or subscriptions, or to represent the paper in any way.

* * * *

The Chartered Meeting.

On Thursday last Mr. Rochfort Maguire (Vice-President) presided over a crowded meeting of shareholders of the British South Africa Company. Mr. Maguire dwelt on the rapid and continued progress of Rhodesia. He emphasised that the Royal Charter which had been granted in 1889 did not terminate in 1914. The Imperial Government had the right every 10 years to re-arrange the administration of the country, but commercial rights would not be affected. The labour supply was at present one of the principal difficulties, but was only felt in Southern Rhodesia. The speaker dealt with measures to improve the efficiency of the natives, and to ensure their safety and comfort. He was glad that a healthy public opinion with regard to the treatment of natives was springing up. He explained the establishment of a Land Bank, and urged the importance of the tobacco industry as eminently suited to the small holder. He welcomed the formation of a strong mining combination under Lord Harris, and believed their own development company would benefit the country, but pointed out that it did not enjoy privileges beyond those granted to its competitors. Mr. Maguire concluded by laying emphasis on the wonderful commercial assets of the country, which was traversed by railways that already were paying their way. They were incomparably the greatest land-owning company in the world, and had ample funds to accelerate developments and earn direct profits.

* * * *

Tables for use in Cyanide Works.

To those who are under the necessity of making frequent and lengthy calculations relating to tonnages, volumes and weight of slime pulp, capacity of solution storages, period of treatment, and numberless other details, the tables prepared by Mr. John E. Connelly, of 42, Ægis Buildings, should come as a boon and a blessing. Almost every factor required for these various purposes may be found at a glance from among the vast array of figures compiled by him with great labour and care, and printed in easily read figures upon linen mounted blue prints. It is impossible to give a detailed description of all the information provided, but a glance at the sheets themselves, two in number, is sufficient to show that it covers pretty well everything in the way of ready made calculations that is likely to be needed in a cyanide works. We understand that one of the leading mining groups has already taken steps to have the sheets supplied to all the mines under its control.

* * * *

Transvaal Gold Mining Estates.

The somewhat sensational decline in the price of Transvaal Gold Mining Estates has provided one of the share market features of the week. In considering the present position of this company it is necessary to bear in mind the fact that the various quartz reefs of the Lydenburg area are of varying width and value, and that the comparatively consistent assays of a Witwatersrand conglomerate reef cannot there be looked for. It may be recalled that on previous occasions the T.G.M.E. Co. has declared development and output returns which have been considerably below the average for the mines. As against this it should be remembered that the company controls a vast mining area and that the value and extent of this is scarcely yet really understood. The directors of the company have been at some pains to make this apparent to shareholders. In response to an enquiry from the London office reading: "Many shareholders enquire what is the cause of the fall in market price of the shares," the following cable was despatched on Thursday: "General Manager reports native labour has improved. Grade ore milled for the month shows considerable improvement. £15,000 profit expected this month without drawing on reserve. Development results not improved. Recent development values have been unsatisfactory owing to majority of drives being in poor ground. Temporary poor results of this nature not unusual and in opinion of board need not alarm shareholders. At end January payable ore developed during financial year exceeded tonnage milled. No reason apparent for fall in shares." The truth of the whole matter seems to be that the South African market is in such a nervous and apprehensive state to-day that the slightest vestige of unsubstantiated rumour is sufficient to frighten shareholders and further depreciate stocks.

* * * *

The Diamond Outlook.

The market for diamonds continues in a satisfactory state. According to reports by the mail, the Diamond Syndicate experienced no difficulty in disposing of the production of the Dutoitspan Mine, which was offered to the trade. Stones from the Bultfontein Mine were also snapped up. The little slackness which had manifested itself in the Amsterdam market is disappearing, and the number of unemployed workmen is decreasing week by week. The demand for common goods has made further progress. As the weak element in Antwerp has been practically pushed out, a further rise in these qualities is expected to take place almost immediately. Considering this aspect of affairs in conjunction with the demand for the better class of goods, it will be seen how sound is the state of the diamond market.

African and European Investment.

The statement of the Africa and European Investment Co., Ltd. for the year 1910 showed a balance of profit accumulated over a series of years amounting to £117,954. As, however, shares, etc., had depreciated at December, 1910, by no less a sum than £152,198—for 1911, the amount of depreciation is not mentioned—shareholders do not participate. On the contrary, the capital has had to undergo reorganisation. The scheme which the shareholders have sanctioned reduced the registered capital from £1,700,000 to £1,275,000, and the issued capital from £1,538,592 to £1,153,944, by taking 5s. off the nominal value of the company's shares, and by issuing three new shares of the value of £1 each in exchange for four old 15s. shares. The accounts, instead of being made up to December 31 last, will be made up to March 31 next, "when the assets and liabilities of the company can be shown on the new and reduced basis." This is one of the companies that will in future hold its annual meetings in London.

* * * *

Amalgamated Properties.

Sir Abe Bailey sailed this week for England. He has a case "on" with Amalgamated Properties Co., of Rhodesia, which, if we may judge from the views expressed at the recent meeting in London, is likely to be prosecuted to the bitter end. It is hoped, however, that matters may not be pushed to extremities, and that the points in dispute may be adjusted. The Company's case is that a certain contract, or certain contracts, that were entered into with Sir Abe Bailey and another company, must be rescinded "without the slightest loss to Amalgamated Properties Co." If the case comes into Court, Dr. Sauer has said that he has provided the directors with a statement which, if read out, "will prove very interesting." The deals that are being cancelled are (1) that with Mr. George Reader (who was described by the Chairman as one of Dr. Sauer's solicitors), whereby the Amalgamated Props. acquired 25,000 shares in Sauer's Buildings, and (2) that with Mr. John Seear, whereby the Company took over a mixed collection of assets, including a further 25,000 shares in Sauer's Buildings. The cancellation of these deals will mean the return to the Company of 51,000 and 99,100 shares respectively or their equivalent in cash at par (5s.). The transaction which is the subject of inquiry is that with the London Zambesia Syndicate. This deal involves 60,000 Amalgamated Props. shares. The deal with the Transvaal and Rhodesia Farms and Mines, involving 675,000 Amalgamated Props. shares, is the subject of legal action, and the matter is therefore *sub judice*. As to the position of the Amalgamated Props. this was shown by the Chairman to have gone from bad to worse. He said the cash liabilities on the 17th instant amounted to £105,089, as compared with cash assets of £21,931, showing a difference on the wrong side of no less than £83,258.

* * * *

The Rhodesian Combine.

The Gold Fields Rhodesia Development shareholders unanimously ratified the agreement for a fusion of interests with the Rhodesia Exploration Company. The view is taken that the Gold Fields Company has made a good bargain, but it should be noted that in many cases the valuation at which blocks of shares were taken over, and interests were acquired, is considerably in excess of current market prices. It is pointed out, for instance, that Antelopes were taken at £300,000, whereas the market figure represents £120,000 only, while in the case of Selukwe Columbia the difference between the valuation of the experts and the market is that between £70,000 and £250,000. Mr. Prinsep, who presided at the meeting, laid great stress on the progress of Rhodesia. He spoke in especially favourable terms of the Shamva Mines, a tribute which the market recognised by raising the price of the shares a fraction. But, in general, this optimistic talk has not aroused much public enthusiasm, for investors are still considerably perturbed by such factors as the Amalgamated Properties report and the uncomfortable suspicion that the value of the Globe and Phœnix reef is falling off in depth.

TOPICS OF THE WEEK.

DIAMONDS AND TACT.

Although the directors of the Premier Diamond Mining Company, Limited, appear to consider that its affairs can interest only the European shareholder, we are not disposed to allow them so lightly to evade their duty to the public of South Africa which, after all, is still the largest proprietor of the property. And, lest we be accused of any hostility to the company, we may begin by congratulating it on an excellent year, giving evidence of sound management in every department of the undertaking. Owing to a change of interests, we understand that, as illustrated by the recent additions of Mr. Gustav Imroth and Mr. S. B. Joel to the board, the house of Barnato has identified itself to an increased extent with the company, and the change, we believe, will have a beneficient effect on future policy and results. Full details of the year's operations have already appeared in our columns, and it only remains to note the important remarks made by the acting chairman this week on the outstanding questions of labour, the diamond outlook, and the State's share of the profits. The labour supply, which at one time during the year was seriously inadequate, has now, according to Mr. Wagner, "much improved," and it is hoped, during the current year, to "achieve the much desired end of fully occupying the plant erected." This is all the more likely in view of the fact that Mr. Ross Frames has decided to devote all his time to the affairs of the company, with special attention to the labour supply, and also in view of the introduction of a new labour-saving machine drill. The cheery accounts of the diamond market that have appeared in our columns from time to time of late were fully confirmed by Mr. Wagner. Mr. Busch's cable sent from the London office on the day of the meeting, stated: "I consider prospects favourable. Market active with good demand." This emboldened Mr. Wagner to declare that he had no anxiety for the future of the diamond trade. "If at any time," he added significantly, "the supply of Premier diamonds should exceed the demand, we are willing and ready to adopt means to rectify the evils of such a position." This, combined with other references in his speech to De Beer's "friendly advice," and the declaration that "the abiding interests of the diamond industry are nearer our heart than the pleasure of handling immediate dividends" go to show that, though Mr. Wagner still revels in returning De Beers gibes and sneers with interest, a better feeling seems to have grown up between the two protagonists of the diamond industry. Should misfortune ever again overtake the diamond trade, and, despite Mr. Wagner's prophecy, such a contingency cannot be ignored, this friendly feeling, no doubt, would result in an agreement to limit production to some extent, at any rate. With regard to the prospects of the Government foregoing a portion of its share of its 60 per cent. interest in the concern,. Mr. Wagner was mildly optimistic. That a new diamond mine taxation measure was on the stocks, he believed. Collateral evidence of the truth of his surmise is furnished by the adhesion of Sir David Harris to the Government ranks of late. How the Premier Mine will fare under the new legislation, Mr. Wagner does not attempt to guess, but he explains that a full statement of the case for the company has been laid before the Government. The surprising features of Mr. Wagner's speech were its brevity and moderation. We miss the spirited denunciations of De Beers, and the eloquent, if long-drawn-out, pleas for more consideration from the Government, that used to fill many columns of the newspapers after each annual meeting in former years. Instead, we find Mr. Wagner cooing as gently as any sucking dove. Can it be that his grievances are all about to be redressed, that his contentment and satisfaction are begotten of favours soon to come?

MINE ACCIDENTS.

Some most illuminating contributions to the growing literature of the mine accident question have been made since our last issue. The valuable paper on the subject read by Mr. R. N. Kotze, the Government Mining Engineer, at the meeting of the Chemical, Mining and Metallurgical Society, appears in another part of this issue. Mr. Kotze, we are glad to find, confirms our view that the value of Mr. Chilton's paper, which initiated the discussion, was impaired by its downrightness and lack of qualification. These failings, Mr. Kotze proceeded to rectify by explaining some of the many disadvantages under which Rand mining labours. His remarks were supplemented by Mr. W. Cullen and Mr. M. H. Coombe, whose contributions contained some very frank criticisms of Rand methods. Mr. Coombe, following the lead of Mr. E. H. Bulman at the Mine Managers' meeting, attributed the high rate of accidents on the Rand to the inefficiency of the white miners employed, not 15 per cent. of whom he regarded as efficient. Mr. Cullen, on the other hand, attributes the high accident rate, in some degree, to the too frequent changes of managers on the mines, an enquiry having elicited from the Government Mining Engineer the information that the rate of such changes during the last three years was no less than 89 per cent.! Mr. Coombe had much to say regarding the placing of inexperienced graduates of Schools of Mines in positions of authority, and it is not to be expected that the manager of the Government Gold Mines at Modderfontein would exaggerate in this matter. Mr. Saner, in his presidential address, delivered at the same meeting, did not ignore the question of accidents, and it will be seen that the discussion has, therefore, been productive of a wide range of views from a number of observers eminently qualified to advance opinions. We hope to publish a further instalment of those opinions in our next issue. Meanwhile it is noteworthy that the topic has afforded a reason and excuse for bringing forward many of the shortcomings of present methods. As is shown by an article appearing elsewhere in this issue, the "big mill policy" has come in for its share of the blame, and some of those who are in a position to know do not shrink from pointing to that modern development as the source and beginning of the evil. The discussion is not yet closed; several more valuable contributions remain to be read, and it is not for us—certainly not at this stage—to attempt to draw final conclusions from the debate. It is of interest, however, to enumerate some of the causes assigned by the several authorities for the Rand accident rate, which causes in most cases suggest their own obvious remedies. In the category may be mentioned: (1) The rushing or "speeding up" policy, attributable to the "full mill" fetish. (2) Inefficient white miners and inexperienced supervisers. (3) Ignorant and unteachable black labour. (4) Too frequent changes of management, staff and miners. (5) Inadequate underground inspection. Though these are the chief, they are not the only, reasons advanced. While the arguments used to support them are often faulty, and the methods employed in emphasising them are sometimes exaggerated, we believe that nothing but good can come from their careful consideration. Indeed, in the best interests of the industry, we would like to see similar outspoken discussions of the many other phases of Rand mining that are open to improvement.

RAND MINE MANAGERS' VIEWS.

Native labour, working costs, and the new mining regulations almost monopolised the address of Mr. E. H. Bulman, the Acting President of the Mine Managers' Association, at the annual meeting of that body last week. On the insensate competition for native labour, with its inevitably harmful results, Mr. Bulman spoke out very clearly and emphatically. He deplored the tendency of the present condition of things to divert an increasing share of the profits of the industry into the pockets of the native, with all-round harmful results. His appeal for co-operation among the groups in this connection will, we trust, be noted, and serve to stimulate the efforts now being put forth to secure uniform and combined action. Mr. Bulman's remarks on the cost to the mines of the new Government regulations will, we trust, likewise attract attention, and we doubt if this aspect of the question has ever entered the minds of the majority of our legislators. His convincing analysis of the agitation directed against the new eight hours' day at the face was most timely and opportune, and, we have reason to believe, helped largely in the discomfiture of Mr. Andrews and his merry men in their ill-advised attempt in the Union Assembly this week to throw the new regulation back in the melting pot after it had had scarcely a two months' trial. Mr. Bulman showed that 80 per cent. of the machine men on the Rand were contractors, and we all know by now that these men have had enough of the absurd attempts on the part of the Labour leaders to interfere with underground working conditions. Perhaps the most valuable feature of Mr. Bulman's address was his acute and searching examination of recent tendencies in Rand working costs. His treatment of this all-important question of the moment was masterly and illuminating. By way of introduction, he drew attention to the fact that many mine accidents were due to the inexperience and inefficiency of a large proportion of the men whom the mines had to employ in the absence of an adequate supply of trained miners. How far increased working costs were due to that inefficiency he did not attempt to measure; but he dwelt on the singular fact that though a year or two previously low working costs were the very height of fashion, that fashion had gone out during the past year. In his opinion there were too many new-fangled ideas started on the Rand, and the mines nearly always had to suffer for them. Increased working costs, however, were a serious matter, and he enumerated several excuses for the increase, viz.: (1) the increase in native wages; (2) native change-house construction and maintenance; (3) increased compensation to natives; (4) native compound expenses, especially with regard to food, etc.; (5) the new mining regulations; (6) shorter hours of work. Probably a cause equal to any other was, he said, the low working costs craze, during which the proper maintenance of the mines was sacrificed. The past year had had to pay the penalty for the neglect. The old-time principles of mining could not altogether be departed from, and the pack instead of the pillar system, which had been so very fashionable on the Rand of late, might perhaps be partly to blame for higher working costs. Mr. Bulman's speech was not without its bright points. He believes, for instance, that the fruits of the present efforts to reduce phthisis will be seen in time, and that the evil will be gradually reduced. A full report of his address will be found in another part of this issue, and may be commended as a clear and authoritative pronouncement on the more important phases of the Rand industrial problem to-day.

SHORTCOMINGS OF THE FULL MILL POLICY.

Depleting Rich Reserves to Sweeten Barren Rock—The Disorganisation of Reserve Estimates—The Government Mining Engineer on Big Mills—A Problem that Demands Early Consideration.

It was probably not anticipated, when Mr. Hugh F. Marriott condemned the "full mill policy" less than a couple of years ago, that we should have so much practical evidence of the truth of his statement within the space of a comparatively few months. The latest evidence of the evils which follow upon the policy is that provided by Mr. Ross Skinner, who tells us that at the East Rand Proprietary Mines, where the "big milling policy"—which is merely the other one under a different name—has been carried to an extent made possible by the great size of the plant, there is evidence which makes it appear "that during 1911 at least 250,000 tons of rock were mined of an average value of 1·9 dwts. from developed blocks of 2·5 dwts. and under"; and further, "that during 1910 and 1911 about half in each year, 78,000 tons of waste filling are estimated to have been withdrawn from mine stopes." In other words it is suggested that about 12 per cent., at least, of valueless rock was put through the mill during 1911 for the purpose of enabling the management to say that the stamps were kept fully occupied and that costs were being kept down. It is not quite clear why the operation of sorting was persisted in when rock of this kind was so urgently in demand, and that it was persisted in we are allowed to assume from the statements published in the Chamber of Mines analysis. Mr. Skinner adds:—"Such methods naturally resulted in obtaining a low working cost, but the penalty paid has been the rapid exhaustion of ore blocks of higher value so as to maintain grade." According to Mr. Skinner the ore reserves at the end of December, 1911, are as follows:—

	Assay Value.	Value.
Tons.	dwts.	s.
6,716,605	6·9	29·4
11,150,397	2·6	11·6
17,867,002	4·3	18·3

At the end of December, 1910, according to the last annual report the ore reserves amounted to:—

	Assay Value.	Value.
Tons.	dwts.	s.
10,273,875	6·6	28·0
3,676,402	2·2	9·4
13,9[illegible]0,277	5·2	22·11

A Huge Depreciation.

The value of the pay ore reserves at the end of the two years referred to were roughly 9½ millions and 14½ millions sterling, so that the assets of the company in this regard stand at 5 million pounds sterling less than they did twelve months ago. This depreciation is equivalent to more than five times the amount of the annual 40 per cent. dividend. It will be observed that there is a discrepancy of some 4 million tons in the total quantity of ore developed, payable and unpayable, since the beginning of mining on the various E.R.P.M. properties. It is understood, of course, that development has not proceeded *pari passu* with mining during the past year. Some discrepancy occurs by reason of the fact that the pay grade has been raised by Mr. Skinner to the extent of 1·2 dwts., and in this way the pay ore reserves have been automatically lessened, but no matter how one looks at the matter it is clear that the "full mill policy" has had the effect of disorganising the reserve estimates and largely wiping out the advantages of the excess development, about which so much was heard last year.

The Policy to Blame.

It is scarcely fair to throw all the blame accruing from a bad policy upon the shoulders of the persons who are appointed to carry it out. And it would be asserting too much to maintain that only at the E.R.P.M. has it been necessary to make supreme efforts to keep the mortar boxes full. During the course of an illuminating discussion on Mr. James Chilton's recent paper on "Accidents in Transvaal Mines," which took place at a C.M.M. meeting on the 16th December last, Mr. J. Moyle-Phillips, underground manager of the Zaaiplaats Tin Mine, said:—"Why is all our waste rock hoisted to the surface instead of being packed underground where it would be of use in supporting the roof? I will answer that question by quoting an instance which occurred under my observation. I was once put into an old stope with two machines where—before I could commence stoping—I had to take down some 150 to 200 tons of bad hanging. This waste rock was securely—as I thought—built into a strong pack which, in the ordinary way, would form a sound support for the roof, but before I was in that stope for two months those 200 tons of waste rock along with a goodly number of other tons of waste rock were trammed away and sent to the surface. Why? To keep the mill going! Thus was the underground work robbed of a safety pillar or pack to keep going a mill which was at least 25 per cent. larger than the mine could carry." Mr. M. H. Coombe had this kind of thing in mind when he remarked the other evening, in the course of a discussion on the same subject of "Accidents in Transvaal Mines," that "The fault lay less with the management than with the policy which erected big mills and dropped the stamps before sufficient development had been achieved to keep the mine ahead of the mill. Every ounce of rock was wanted, waste as well as reef. Mining was becoming a lost art on the Rand. The process pursued was simply 'gouging' out everything to feed a monster that could not be satisfied. Smaller mills, more clean reef mining, less hoisting of waste and more left in the stopes, more pillars and filing would conduce to more economical work, better dividends and fewer accidents."

Unfavourable Conditions.

Reference has been made to the "big milling policy" as being almost synonymous with the "full mill policy." It it not necessarily so. It should be obvious to anyone with commercial knowledge that a large turnover with small profits is as capable of excellent results in the sphere of mining as in that of drapery or beer selling. Success in the latter branches requires a large demand, while in the operation of gold production it is equally essential that there should be a continuous and abundant supply of cheap labour. Labour on the Rand has not been, for a long time past, either cheap, continuous or abundant, and thus the necessary conditions for the proper carrying out of the "big mill policy" have been wanting. The attempt to carry it out under such circumstances degenerates into a struggle for a full mill, on weekdays, Sundays and holidays, which may be magnificent, to outside appearances, but is not commonsense business. The "emancipation of the mine manager" from the slavery of a policy, as Mr. Marriott termed it, has still to be accomplished in a great many cases. The mining houses would be willing enough to bring it about, no doubt, if the average shareholder did not insist upon their considering, first and foremost, the exigencies of the sharemarket. The efforts at reform of Messrs. Reyersbach and Marriott are sufficient proof of this. Now that shareholders in Europe have had the advantage of studying the effects of an inefficient "big mill policy" at the E.R.P.M. they will do well to reflect whether a policy of " common sense " would not be worth trying.

Mr. R. N. Kotze almost Prophetic.

The disadvantages of big mills and huge crushings on the spectacular basis have not been discovered lately. They were foreseen long ago. In discussing Mr. Ross Browne's paper on the " Working Costs of the Witwatersrand " a few years ago, Mr. R. N. Kotze, the Government Mining Engineer, said, *inter alia* :—" The erection of large mills up to 1,000 stamps has been frequently advocated, especially within the last few years. Though there are considerable advantages to be gained by adopting such a large crushing capacity, these are largely confined to surface operations, and the reduction of costs to be expected does not increase very materially after going above 300 or 400 stamps. On the other hand, there is great danger of underground inefficiency when operations have to be conducted on such a large scale, and rather more than a possibility that much unprofitable ore will be mined and milled. . . . Apart from the natural conditions of the mine, the average of human ability and endeavour also has its limitations, and while an exceptional organiser and manager may be found here and there capable of running a large mine and plant as successfully and efficiently as a smaller one, the writer thinks that a cautious policy is necessary in this question as in many others, and that it is more than likely that for efficiency the maximum size of mill and rate of exploitation of one mine has already been reached on these fields." The largest single mill at that period was the Robinson Deep of 300 stamps.

A great deal more testimony to the same effect might be quoted, but with the evidence of the E.R.P.M. in particular, and that of the Chamber of Mines' analyses of the last two or three years in general, it is scarcely necessary to labour the question further. The more abundant influx of native labour which will probably take place during the present year may be an inducement to postpone the consideration of the very thorny and complex problem outlined in the foregoing paragraphs, but, if so, it will merely be a postponement—the necessity of tackling the matter in earnest, sooner or later, is inevitable.

ZAAIPLAATS AND ROOIBERG PROSPECTS.

A Falling Tendency in the Market—Brief Review of their Position—Objects of Marked Speculative Antipathy.

At the beginning of January, Zaaiplaats shares were being bought locally at 77s.; on Wednesday they were dealt in at 55s., or nearly 30 per cent. less. Last year the highest price was £5⅛, and a large number of buyers must have got in at this figure, to judge from the excitement which prevailed with regard to the surtax at about that period. A depreciation of more than 50 per cent. in less than twelve months in shares of a company which is supposed to stand on an excellent footing, and which paid dividends amounting to 20 per cent. for the year ended December 31st, 1912, is obviously one which cannot fail to attract special attention. The case of the Rooiberg is also interesting in a similar way. In less than twelve months the shares of this company have fallen from 37s. to 25s., nearly 33 per cent., although a new milling and ore dressing plant, which is in course of erection, is shortly about to commence operations upon a much larger scale. Last year the company paid dividends in June and December amounting altogether to 15 per cent. In connection with Rooiberg, it may be remarked that there exists an option till May 31st next on 30,000 shares at 35s. If the shares " make up " on the London Stock Exchange at 60s. or over at two consecutive settlements, the company may call upon the option holders to exercise their rights within 45 days after notice has been given. It does not appear that the option is going to be exercised.

The last Rooiberg quarterly report brings us to the end of 1911, and from this it appears that development has continued to give satisfactory results. For the year ended June 30th, 1911, a profit of £52,764 was made on the treatment of 17,781 tons, the extraction being only 58·2 per cent. on ore carrying 7·036 per cent. metallic tin. The balance of this awaiting further treatment by the new plant amounted at the 30th June last to 29,535 tons, from which it has been estimated that a working profit of £67,540 will be obtained. At the end of December this accumulation had increased to approximately 37,522 tons of practically the same value as the previous quantity, so that by a similar calculation the assets in this department were then worth about £86,000 net. The balance of nearly £40,000 available cash assets at the beginning of the present year, as pointed out in this journal last month, would bring the cash accumulated assets to, say, £120,000. Ore reserves at the end of the last financial year were estimated at 21,600 actual and 20,000 probable milling tons of a recovery value of 4·5 per cent. metallic tin, or rather higher in recovery value than the ore worked during the previous twelve months. With the same working cost, and at the same average price of tin, these reserves should be equivalent to a working profit of about £100,000. The issued capital of the company, £180,000, is thus considerably exceeded by the cash assets and reserves of various kinds actually in sight. The new plant will be capable of treating, say, 30,000 tons per annum, as against 17,000 treated for the year ended June 30th last, and on the same basis of costs and recovery profits should be equal to approximately £100,000. In the face of these figures, the price at which the shares of the company stand at present does not, it will be admitted, reflect the immediate possibilities of the undertaking, to say nothing of what may be accomplished in future.

Zaaiplaats.

For the year 1911 dividends amounting to 10s. 6d. per 5s. share were paid, as already mentioned. On the price above quoted, namely, 55s., the dividend works out at 10 per cent. It will probably be said that 10 per cent. is not at all an excessive amount to pay upon a share in a Transvaal tin mining company, or, indeed, upon the shares of any other tin mining company, when one considers the risk attaching to undertakings of this kind as compared with, say, those which are inherent to gold mining. The unsatisfactory results said to have been obtained at Groenfontein may, of course, have a great deal to do with the popular opinion regarding Zaaiplaats, and there is always the possibility of variation in the price of tin to be considered. With regard to the latter problem it seems to be agreed that the demand for tin will be more likely to increase than diminish, and there is not yet any evidence that supplies will be materially increased from any of the great producing centres. As to the T.C.L. operations in Groenfontein, Roodepoort and Zaaiplaats lease little can be said, but sufficient work has been done to make it clear that the Zaaiplaats deposit is of a very much more favourable character than anything so far discovered elsewhere in the neighbourhood, and there is little reason to suppose that the T.C.L. properties have seen their best days yet. Altogether, the position of these two great mines, Zaaiplaats and Rooiberg, is worthy of careful study. A brief survey of their position in the market at the moment leads one to the belief that an adverse movement is affecting the shares of both, quite apart from the general tendency of the South African market.

Coal Mines of the Transvaal.

I.—THE WITBANK COLLIERY.

A Sound Position—The Value of the Uitspan Mine—Ability to Produce 100,000 Tons per Month—A Life of at Least 30 Years Anticipated.

THE Witbank Company has well earned the distinction of being South Africa's leading coal producer. Situated in the heart of the Middelburg-Witbank coal area and alongside the main Pretoria-Delagoa Bay railway, the Witbank Colliery's loading bin for the South African Railways is 91 miles from Johannesburg by way of the railway through Brakpan and it is distant 276 miles from Delagoa Bay, the port and gateway of the Transvaal. The Witbank pits are, it will thus be seen, favourably situated with regard to the great gold mining industry of the Witwatersrand and at the same time to the coast.

POSSIBILITIES OF AN EXPORT TRADE.

Mention of the coast and Delagoa Bay naturally opens up the question of an export trade. The possibilities of such a trade have on more than one occasion been carefully enquired into by those who direct the destinies of coal mining in this country. India, for instance, has been looked upon as a likely customer, and many other parts of the industrial globe have come within the scope of the South African collieries' commercial designs. That there are vast areas of coal in the Transvaal, and that such areas are favourably situated with regard to the sea board cannot be denied. At the same time one is forced to the conclusion that under the existing conditions of loading, etc., at Delagoa Bay the prospects of creating a really important export trade are very small. No doubt the day will come when under different conditions the coal pits of the Transvaal will derive a full share of benefit from the exportation of coal to other countries. For the present the Transvaal collieries must, it seems, look to the internal trade of South Africa for the sale of coal, but at the same time the possibility of an export trade must not be ignored, for such a trade will one day afford a really broad market for Transvaal produce. To-day sales have to be carefully regulated by a parental Coal Owners' Association, and from this fact and from the statistics published as to output and selling value, it is patent that the market is cramped and narrow. It is notorious that Transvaal coal is the cheapest in the world, and when one takes into account its average calorific value, especially in the Witbank area, one cannot but feel that in the fulness of time the more important of the Transvaal collieries will secure the larger share of prosperity which by all rights of industry is theirs.

SOME IMPORTANT FIGURES.

In order properly to appreciate the position of the Witbank Colliery Company, it is necessary briefly to direct attention to the foregoing facts and also to the statistics of coal production in the Transvaal as reflected in the last Mines Department returns. For December, these were as follows:—

Province.	No. of Collieries Producing.	Tons Mined.	Tons of Waste Sorted.	Percentage of Waste Sorted to Tons Mined.	Total Coal Sold.	Total Value realised at Pit's Mouth.	Value per Ton at Pit's Mouth.
		Tons.	Tons.	%	Tons.	£	s. d.
Springs-Brakpan Area	5	73,354	18,581	25·33	53,648	14,802	5 6·22
Middelburg Area	13	307,487	50,477	16·42	258,265	57,252	4 5·20
Other Areas	8	38,404	440	1·15	34,637	7,021	4 0·65
Total for Transvaal	26	419,245	69,498	16·58	346,550	79,075	4 6·76

The Witbank Colliery Company's property consists of the following:—Witbank, 2,428; Joubertsrust, 1,057; Uitspan, 225; freehold portion of Blesboklaagte mineral rights, 4,216 morgen (approximately 8,920 English acres). On these areas two collieries have been opened up—the original Witbank mine and the Uitspan Colliery, situated slightly over three miles to the east; that is to say, towards Delagoa Bay. It will here be best to consider these two propositions separately.

THE UITSPAN COLLIERY.

THE WITBANK PIT.

The Witbank main shaft is situated within a stone's throw of Witbank Station. The main shaft strikes the coal seam at a vertical depth of 110 feet and is situated but a few yards from the old circular shaft which has now fallen into disuse. The shafts, hoisting, electric, and picking and screening plants, together with the offices of the company, are, as already stated, in close proximity to the South African Railway line, and the whole plant and offices, etc., form a compact and well-laid-out establishment. The main Witbank shaft contains two compartments, and in each of these a double-decked cage is operated. The tonnage delivered to the picking belts from this shaft is greatly augmented by the delivery of coal by mechanical haulage from the south side of the mine, from which section the greater part of the Witbank tonnage is now being won. The south incline shaft is situated some 4,000 feet from the main vertical pit. About 2,600 trucks per day are pulled by mechanical haulage from this south incline, and the haulage could, if necessary, deal with 4,000 trucks or, say, 2,000 tons of saleable coal per diem.

Witbank Colliery: The Surface Works.

Ability to Produce 100,000 Tons per Month.

The Witbank Company's output has, however, to be regulated and determined by agreements existing between the members of the Coal Owners' Association, by the extent of the demands for coal received by the Association and by the nature of contracts obtained. At the present time the Witbank Company is producing from its two collieries at the rate of 62,000 tons per month, inclusive of "duff," or fine coal. The largest monthly output made by the concern has been about 75,000 tons, and there can be no doubt that a production of 100,000 tons per month would not be beyond the productive ability of the company were such an output called for. The coal seam in the Witbank mine has an average thickness of about 6 feet. There are about 200 working faces in the property. All the haulages at the Witbank mine are now electrically worked, and in order to ensure their efficient operation a 750 b.h.p. motor has recently been installed. Air shafts have been sunk at frequent intervals, and the ventilation conditions are stated to be wholly satisfactory. Moreover, both the mines of the company, in common with the great majority of South African collieries, are free from gas.

The Uitspan Plant.

The Uitspan Mine.

The Uitspan Colliery, which has now been in operation for about eleven months, is situated about 6,000 yards south-east of the Witbank shaft. The plant erected here is of simple yet efficient type, and is of course capable of expansion should a larger output be called for from the Uitspan section. No electric plant has been installed, and there is thus no electric light underground. Neither are there any coal cutters at work. Steam boilers of the Robey portable type are erected, and a well-laid-out screening plant is in continual operation. A siding has been completed and a locomotive is in operation for despatch of the Uitspan produce to the main line. The expenditure on the Uitspan equipment figures in the last balance sheet of the company, viz., that for the year ended August 31st, at £23,395, and the company must be congratulated on having expended such a comparatively small sum in the development of an exceptionally valuable asset.

A Valuable Property.

The coal at the Uitspan Mine is of excellent character, and the seam is approximately 14 feet in thickness. The incline shaft, which "falls" about one in six, cuts the seam at 50 feet, and a main road has been driven for 1,200 feet in a westerly direction. It may here be remarked that about 10 per cent. of the company's produce is waste or stone, and 8 per cent. duff, for which latter a market is now found.

A Fine Record.

The Witbank Colliery Company has up to date produced in round figures five million tons of coal, and has returned to shareholders 175 per cent. in dividends. The company

Witbank Colliery: View Showing Portion of the Mechanical Haulage from South Incline Shaft.

carried forward a balance of £40,495 at the end of August last, is possessed of mineral rights over nearly 9,000 acres of ground on the main Pretoria-Delagoa Bay line, and has two well-developed and equipped collieries capable of producing about a million and a quarter tons of marketable coal per annum. Moreover, the great bulk of the company's property is coal-bearing. It is indeed estimated that the company can rely on a production of approximately 22,000,000 tons of saleable coal, which at an output of 60,000 tons per month gives the colliery a life of over 30 years. As a matter of fact, it is likely that this estimate will be substantially exceeded in actual practice. Having regard to all these facts, it should be abundantly clear that the Witbank Colliery Company is in an exceptionally strong position. The company has joined the Association—an institution which had as its avowed object the maintenance of a fair price for Transvaal coal—and it may be safely presumed that the Witbank Colliery is an important factor in that corporation. For instance, although the output for 1911 was more than 100,000 tons below that for 1910, the company maintained its rate of dividend at 30 per cent., and in face of the continued decline in selling price of Transvaal coal at pit's mouth (despite the efforts of the Coal Owners' Association) the dividends distributed last year were 5 per cent. in advance of the 1909 distribution, although the output for that year was announced at 740,497 tons as compared with a production of 713,480 tons in 1911.

A Strong Position.

These are facts and figures which should not only prove a source of satisfaction to shareholders in the Witbank Company, but they should also prove of substantial importance to those interested in the coal trade of South Africa who are not shareholders. Taking everything into consideration, the outlook for the Witbank Company must be deemed satisfactory, despite the low price prevailing for fuel in this country. The mine is economically operated and, although we do not know what rate of working costs prevails at Witbank to-day we imagine that even further suicidal competition and a consequent further reduction in price could not appreciably affect the financial status and general prosperity of the Witbank Company, except for a very restricted period of time.

Witbank Colliery: Another View of the Surface Works.

GOVERNMENT AID FOR THE NEW STEEL WORKS.

Full Details of the Benefits Conferred on the New Company under Agreement.

GOVERNMENT Notice No. 127, setting forth the agreement entered into between Henry Horace Wright and the Minister of Mines, contains the following among other features:—It will be remembered that for the purpose of encouraging the establishment of works for the manufacture of iron and steel from iron and steel scrap the Government of the Transvaal did invite proposals for the erection and establishment of local works for the manufacture of iron and steel from iron and steel scrap and *inter alia* offered that the successful applicant would be entitled to obtain the accumulation of scrap iron and steel lying at the Pretoria Railway Station and amounting approximately to fifteen thousand tons at a price of one pound sterling per ton, and further that arrangements would be made by which the successful applicant would be entitled to purchase other scrap as set aside by the railways. The contractor shall on or before October 31, 1911, form or cause to be formed and registered under the Companies Act, 1909, of the Transvaal, a joint-stock company having its registered head office in the Transvaal, and having for its principal objects—(a) To carry on the trades or businesses of iron masters, steel makers, steel converters, smelters, engineers, and iron and steel founders, in all their respective branches, and to search for, get, work, raise, make merchantable, sell and deal in iron, ironstone, steel, and other metals, minerals and substances, and more particularly the establishment of steel and iron works and rolling mills in the Transvaal Province or elsewhere within the Union; (b) The treatment of local iron ores so far as may be commercially feasible. The initial capital of the company shall be about two hundred and fifty thousand pounds sterling (with power to increase the capital being taken) divided into two hundred and forty-seven thousand five hundred seven per cent. cumulative preferred ordinary shares of one pound sterling each, and fifty thousand deferred ordinary shares of one shilling each. The Minister may from time to time nominate one director to the board of directors of the company. The company shall acquire at Vereeniging or elsewhere a site to be approved of by the Minister, and will on such site erect and instal the necessary buildings, works, plant, machinery, and equipment for its business. It shall, however, be a condition that the tenure under which the said land shall be held by the company shall be subject to the approval of the Minister. The Minister, with the consent and approval of the Administration, undertakes on behalf of the Administration:—(a) To sell to the company fifteen thousand tons of scrap at present lying at the Pretoria Station; (b) The purchase price of such scrap shall be one pound sterling per ton; (c) The company shall take delivery of at least twelve thousand tons of scrap within six months from the date of the agreement referred to in the seventh clause hereof, and shall thereafter take delivery of the balance within the next six months. The delivery herein referred to is subject to the conditions of sub-section (j) hereof; (d) Further, the company shall purchase at least five hundred tons per annum of scrap from the Administration—(1) At the price of one pound sterling per short ton at Kimberley, Bloemfontein, Harrismith, Bethlehem, and Volksrust, and within the area served by the railways of the Administration north of those points within the Union of South Africa plus railage; (2) for the area south of the points named in the preceding sub-paragraph, including Natal and Cape Provinces, the price shall be approximately thirty-one shillings per short ton as a minimum and forty-two shillings per short ton as a maximum, the actual price to be fixed by the Administration, and on the understanding that the scrap purchased will be used in the company's blast furnaces in South Africa: and payment shall be made in cash against delivery as aforesaid during the period of sixteen years from the date on which the company shall take over the rights and obligations as in the seventh clause hereof provided. The company shall not have the right to select or reject any scrap, but shall be compelled to take it in the condition in which it exists at the time and at the site or sites (being a railway station or other suitable loading place upon the lines of the Administration) where it is situate, but not being more than 100 miles distant from the company's works. The company shall further have the preferential right to purchase from the Administration at the price and upon the terms mentioned in the preceding paragraph, all the surplus scrap of the Administration in excess of the said five hundred tons during the aforesaid period of sixteen years, provided, however, that should the company not exercise its right to purchase within fourteen days after having received notice that the surplus scrap is available for purchase, the Administration may dispose of such surplus scrap elsewhere. The Administration shall not during the continuance of this agreement carry any scrap for the purpose of export at a rate of less than one penny per ton per mile, subsequent to the first day of July, 1911, excepting only such scrap as shall not be taken over by the company. The Administration shall charge the company for transport of any scrap from the site on which it may at the time lie to the railway station nearest the company's works at the rate of one halfpenny per ton per mile for the first two hundred miles, with a minimum charge of one shilling and eightpence per ton, and the Administration shall charge the company one farthing per ton per mile for any additional distance over two hundred miles. The Minister or the Administration shall during the period of sixteen years place with the company his and its orders for such iron and steel goods as the company shall from time to time produce, and the company shall produce and supply such goods in accordance with the specifications as furnished by the Minister or the Administration, as the case may be, subject always to the condition that the company's works are capable of producing such goods and to the condition that the price and time quoted for such goods is satisfactory to the Minister or the Administration. After the third year of the company commencing manufacture, and during the currency of this agreement, the company shall carry on such experiments in the smelting, working, and treatment of local iron ores as may be agreed upon between the Minister and the company, or as the Minister may approve, require or direct (which approval of the Minister may be signified by the acquiescence of the Minister's nominee on the directorate of the company); provided, however, that the company shall not be obliged to carry on any such experiments if on reference to an independent authority to be appointed by the Minister and the company mutually, and failing agreement as to such appointment, to be appointed by the Council of the Iron and Steel Institute, the person so appointed shall certify—(a) That the finances of the company do not warrant the expenditure requisite for such experiments; or (b) That smelting of local iron ores by recognised processes then existing and being worked by iron and steel manufacturers cannot be profitably worked on a commercial basis within the Union; and further provided that in no case shall the company be bound to expend money on such experiments save out of its surplus profits, and then only to an extent not exceeding the following proportions, namely:—Annual surplus profit in preceding calendar year: Up to £1,000, from £1,000 to £9,000, over £9,000. Amount which may be spent: All surplus profit, £1,000; £1,000 plus half the surplus profit over £9,000 with a maximum of £5,000. For the purpose of this clause, "surplus profit" shall be taken to mean the balance left after deducting from the total revenue from profits of steel ~~manufacture the running~~ and working costs of the steel manufacture, reasonable allowances for depreciation, interest on capital borrowed, expenses of administration, and a dividend of seven per cent. on all shares issued including arrear dividends on preference shares issued.

THE DEEPEST WORKINGS OF THE CENTRAL RAND.

High Dip of Reef in the Turf Mines—Probable Influence on Working—Effect on Mine Lives—A Highly Important Development.

The high angle of dip to be observed in the lowest workings of the Turf Mines section of the Village Deep, Limited, which we referred to in our last issue, opens up a large and important field for anticipation and discussion, and although until more development work has been achieved, it would be unwise to write in anything but indefinite terms, the stratigraphical features to be observed in the lowest levels of the deepest mine in the central section of the Witwatersrand Gold Fields are of such interest that a further consideration of the subject is called for.

Outcrops and Deep Levels.

The angle of dip of the Main Reef series at its outcrop was found in the earlier days of Central Witwatersrand Mining to vary considerably in different mines, but in most cases it was ascertained to be well over 45 degrees. A tendency to flatten considerably in depth was, however, observable over practically the whole stretch of the fields, and, save where faulted ground has disturbed the normal inclination of the auriferous conglomerates, this characteristic has, we might say, been observable throughout the entire history of the Witwatersrand. It has, in fact, been one of the universally accepted premises of Rand gold mining. The Turf Mines shaft is in reality a fourth row dip shaft, the Salisbury and Jubilee representing the outcrop, the Village Main Reef the first row dip, the Village Deep the third, and the Turf Mines may therefore be described as a deep-deep-deep level. In the Salisbury the dip at surface was 85 degrees, and in the Jubilee 75 degrees. In the Village Main Reef the dip was found to have flattened to 30 degrees. The eastern or No. 1 shaft of the Village Deep Company intersected the reef at a depth of 2,075 feet, and in the northern workings of this mine, *i.e.*, those nearest surface, the average dip was observed to be less than 30 degrees. The strata in the region where the Turf Mines shaft was put down indicated a dip of 34 degrees, whilst in the lowest workings in that mine to-day the formation inclines at an angle approximating to 40 degrees. This higher angle of dip naturally affects the value of the property to a marked degree, and we here propose briefly examining the probable and possible results of its influence.

Cheaper Mining Costs.

In the first place, attention may be directed to the beneficial influence of such a dip on mining costs. Lashing charges constitute a not inconsiderable item in the operating charges of a Rand mine, and it must be clear that such work is carried out much more economically in steep than in comparatively flat stopes. Apart from economy in cost, economy in native labour is a vital factor, especially in a time of acute labour shortage.

Depth to the Reef.

The question of the depth to the reef in the most southern section of the Turf Mines is one on which it is interesting to speculate. From the outcrop of the conglomerate beds in the Salisbury and Jubilee mine to the extreme southern point of the Village Deep Company's Turf Mines claims is, roughly, 11,000 feet. At an average dip of 30 degrees the reef would be encountered in the Turf Mines extreme southern boundary at a depth of between 6,000 and 6,500 feet. Having regard to the fact that in the more northern section of the Turf Mines the average inclination is in the neighbourhood of 40 degrees, it would appear that unless very marked flattening takes place as a greater depth is reached, the reef will not be attacked in the extreme southern claims at a depth of less than 8,000 feet. By means of stage winding, and perhaps artificial ventilation, it should, however, be possible to carry on profitable mining operations at this depth without any great difficulty.

Tonnage per Claim.

The dip of the reef affects, of course, not only the important question of the depth at which the conglomerates will be encountered in the most southerly workings of the Turf Mines claims, but also the tonnage per claim. On the average about twelve cubic feet of Rand ore may be taken to the ton. This means that one foot of reef at a dip of 40 degrees would represent 6,965 tons per claim, whereas a dip of 35 degrees would represent 6,513 tons, 30 degrees 6,160 tons, and 25 degrees 5,887 tons. The tonnage of ore existing in the Turf Mines is thus obviously increased by reason of this higher dip. Of course, as we stated in our last week's issue, it is by no means out of the question that the high dip is due to the influence of a dyke which has yet to be exposed in sinking and development operations. Another geological possibility which is worth bearing in mind is a duplication of strata. It might, in fact, at some future date be worth the company's while to investigate this point, for it is patent that the reef conditions existing in the lowest levels of the Village Deep Co. are different from those generally anticipated, and underground boring might establish some further interesting and important features.

The Important Question of "Life."

In the latest official estimates of Village Deep ore reserves, the stope widths are placed at 5 ft. 2 in for the Main Reef Leader and 4 ft. 2 in. for the South Reef or a total of 9 ft. 4 ins. for the two bodies. Disregarding the possibilities of the Main Reef body (from which, we may remark, no encouraging values have as yet been obtained), the following tentative calculations may be made. In view of the steepening of the formation in the Turf section, we will assume an average dip of 35 degrees, although we wish it to be distinctly understood that further developments in depth may necessitate the adoption of some other "dip" standard. Until recently the South Reef in the Village Deep Mine had proved a good deal of a disappointment, but having regard to the much better developments recently secured on this body, it does not seem unreasonable to assume that it will prove of profitable value over the greater part of the proposition. In calculating the "pay" ore tonnage per claim, a deduction of 33⅓ per cent. may be made for faults; sorting and poor zones in respect of Main Reef Leader, and a deduction of 50 per cent. under the same headings for South Reef. Taking Main Reef at an average stope width of 5 feet and a dip of 35 degrees, the mill tonnage left after making the above deduction is 21,710 tons per claim. Applying a similar method of reasoning to the South Reef, but deducting 50 per cent. for sorting, unprofitable zones and broken ground, a total of 13,026 tons is arrived at, making a total for the two reefs of 34,736 mill tons per claim. The total mining area of the Village Deep Company is 535 mining claims, and at 34,736 tons per claim the total "mill" contents of the property may be estimated at 18,583,760 tons. Up to the end of last year the company had crushed 2,595,127 tons, so that on the above premises there were, roughly, sixteen million tons remaining in the property at the end of December, 1911. The last quarterly report indicated a rate of exhaustion approximating to 600,000 mill tons per annum, 146,600 tons being stamped during October, November, and December last. The life as from the end of December last is thus calculated at 26·6 years.

The Broader Aspect.

The foregoing figures have been advanced not only with a view to demonstrating that the Village Deep Company has, in all probability, a much longer period of profitable working to look forward to than has been generally understood, but they are also intended to direct attention to a development which may well have a most comprehensive, far-reaching, and beneficial effect on Central Rand mining. For all the brilliant survey work carried out by Mr. H. F. Marriott in the Turf Mines boreholes, it must generally be admitted that the results obtained from these expensive diamond drilling operations were practically valueless, because of the very great deviation of the holes from the vertical. Actual development exposures in the Turf Mines claims have, however, established the highly important fact that the stratigraphical conditions in the deepest section of the Central Rand that has yet been exploited are more favourable to deeper level mining than the brains of the Rand, with the data then available, could foresee a few years ago. The foregoing article should be considered not only, therefore, in reference to one particular property, but in its bearing on the central section of the world's greatest gold field. Should the dip of the reef now observable in the lowest workings of the Turf Mines be maintained for any further distance in depth, and for a substantial extent of reef from east to west, time-honoured conceptions of the value of the deeper levels of the Central Witwatersrand may well have to be largely modified.

THE FURTHER WEST RAND.

A Twenty-Stamp Mill on a New Line of Reef—Supposed Randfontein Series on Waterval—An Interesting Geological Study.

A GREAT deal of interest is being shown out Krugersdorp way in the twenty-stamp battery and accompanying cyanide plant which is being erected on the New Penwith section of the West Rand Unified block. The construction is a prominent object on the veld a couple of miles or so west of the railway and about half that distance west of the Van Hulsteyn claims on the Randfontein Central area. The Zeerust railway passes within a few hundred yards of the mill site. The fact that a crushing and recovery plant is being set up at that particular spot is the more interesting because it is located on what is commonly considered to be one of the outer series of reefs which extend from the neighbourhood of Austin's claims and those of Count Waru's old company, north of Witpoortje, around the Krugersdorp bend into Waterval. Some hold a different opinion, and maintain that the Botha's Reef series, heading for the Queen's Battery ground as it obviously does on leaving the West Rand Central claims, curves back somewhere beneath the Black Reef strata in the intervening ground, and runs through the big block belonging to the Randfontein Estates on Waterval, and so into the claims owned by the West Rand United. It was mainly on this theory, we believe, that the latter area was taken up. In any event the erection of a mill upon a line of country which is nearly a mile west of the Randfontein shafts, on their footwall side is a circumstance that cannot fail to attract attention, because Carrick and Hatch have laid it down that the Botha series runs through the Johnstone, Van Hulsteyn and Ferguson blocks of the Randfontein Central area, and upon this theory the Penwith mill will operate upon an entirely new line of country. However that may be, the reefs opened up by the West Rand Unified have given assay results which are said to be sufficiently promising whatever opinions may be held with regard to their identity.

THE REEFS.

What are supposed to be the Randfontein series are receiving chief attention at the moment, and what is called the West Reef has been opened up in a series of shafts and open cuts. The overburden here is fairly deep in places, but a large portion of it comprises rubble which has excellent values, so much so that it is anticipated that the mill can be kept going for some time upon this material. The Unified claims have the unique feature of possessing five reefs within a distance of a little over 100 yards, all of which carry payable values. Three of these have been intersected in a crosscut going west from the Penwith shaft at a depth of over 100 feet, a fourth is exposed at the surface in some open workings, and the fifth has been struck in the newer shafts. It remains to be seen if those in the Penwith crosscut are permanent in the matter of assay values. If so, it is clear that a comparatively small rate of development will be sufficient to keep the twenty-stamp mill abundantly supplied with ore, and if prospects continue favourable it is not unlikely that an enlarged plant will come under consideration at an early date.

GEOLOGICAL INTEREST.

The property is interesting from a geological point of view inasmuch as it exhibits a curious structural arrangement along the line of outcrop of the reefs. The Penwith shaft is located upon the outcrop of a fault plane, apparently, to the west of which the strata dip westwards at a fairly high angle, being either overtilted or the result of a fold, most probably the latter, while to the east the beds dip at a much lower angle in an easterly direction, and lie unconformably upon the ones previously referred to. There is no evidence that the one is a much more recent formation than the other, and the belief formerly held that the easterly dipping rocks are Black Reef beds is not tenable. The impression given is that a sharp fold has occurred and that the eastern limb of it has been thrust upwards over the western limb. Dr. Mellor and other geologists have inspected the neighbourhood but it is, of course, impossible to form any reliable opinion with regard to the horizons exposed without spending a great deal of time upon the problem. It is interesting to note that while the reef series running northwards at Randfontein as far as the East Randfontein ground have a rather steep dip, being about 80 degrees at the outcrop, just near the Central Co.'s stamp mill, the dip changes somewhat abruptly beyond this point to about 45 degrees in the Ferguson and adjacent blocks, so that a spreading out of the Randfontein series towards the west between the Central battery and the West Rand Central block is indicated. Enquiries are said to have been made by one or two of the leading houses with regard to the West Rand Unified claims.

Crown Mines, Ltd.

The salient features of the report of the Crown Mines for the December quarter are: Development, 16.806ft.; reef disclosures: Main Reef 980ft., width 34in., assay value 3.6 dwts.; Main Reef Leader 4,325ft., width 30in., assay value 16.5 dwts.; South Reef 3,896ft., width 26in., assay value 16.6 dwts.; ore milled 424.200 tons, gold won 174,472 ozs., equal to 8.23 dwts. per ton; value £732,330, equal to 34s. 6d. per ton; working costs £406,941, equal to 19s. 2d. per ton; working profit £325,389, equal to 15s. 4d. per ton; profit from accumulations £4,266; sundry expenditure £3.066, net profit £326,589; estimated profits tax £32,036: reserve gold, December 31, 4,824 ozs; net profit for 1911 £1,259,986. The capital expenditure for the quarter has amounted to £116,082 3s. 9d., exclusive of the proportion of an annuity of £19,979 payable to the Government in respect of mining rights acquired under an area of 5.2778 claims. The annual meeting of shareholders will be held in the board room, the Corner House, Johannesburg, on March 6, at 11 a.m. It will be proposed at this meeting to adjourn until May 23 at 11 a.m., in order to give shareholders ample opportunity of perusing and considering the report and accounts, which it is anticipated will be in the hands of shareholders about April 6, before deciding as to the disposal of their proxies.

RAND MINE MANAGERS IN CONFERENCE.

Annual Meeting of the Association—Acting President's Valuable Address—Review of the Industrial Features of the Year—Labour, Illicit Liquor, Working Costs, Phthisis, and Accidents Discussed—Some Interesting and Important Facts.

Mr. E. H. Bulman presided at the annual meeting of the Association of Mine Managers, last week, and in the course of his speech moving the adoption of the annual report, said: Gentlemen, I have to inform you with great regret that your president, Mr. Stockett, has been ordered away by his doctors owing to ill-health, and has therefore been unable to occupy the chair at this meeting. I need not add that it is the sincere hope of every member of the association that he will soon be back among us with his health entirely restored. You have the annual report of your Council before you, from which it will be seen that the financial position of the association is sound. The report reviews concisely the work of the past year, but there are a few points in it to which I should like to make brief reference. With regard to membership, it will be noticed that there is a decrease of nine members as compared with last year. This is practically due to the curtailment of operations of some of the mines.

(Photo by Kellue.)

MR. RUEL C. WARRINER,
Elected President of the Association of Mine Managers for this year.
Reprinted by permission of "The Star."

Native Labour.

The difficult question of native labour is still before us, and the shortage in this respect has been felt in much the same way during the past year as in previous years. It is, as I say, a question full of difficulties, but there are certain evils connected with it, such as the present system of private recruiting, which should, if possible, be done away with at any cost, and your association hope that the Chamber of Mines will yet evolve some scheme to centralise recruiting, and thereby stop the ruinous and disastrous competition among the mining companies for labour, and to check the gradually increasing rate of native wages which is rapidly placing the profits of the industry into the pockets of the native, who will become scarcer as he becomes richer. During the period, 1902-1904, there was a great dearth of unskilled labour which was successfully overcome by a scheme of imported labour which was a boon to the mines; however, that was taken away by circumstances unconnected with mining. The experiment was a great success in every way, and if tried again, even in a modified form, would go a long way towards settling the question of native labour. Another evil of the native question is the farming out of natives to the mines by individuals, both black and white, and, as you will see in the report before you, your association endeavoured to have this particularly pernicious practice prevented in the new Native Labour Regulation Act. Unfortunately, however, the Government have not been able to see their way to prohibit it.

Illicit Liquor Trade.

The illicit liquor trade seems to flourish in concert with increased native wages, and though the police seem to think that the chief cause of trouble is the native beer brewed in the locations and compounds, and suggest a scheme of central breweries under dependable control, I personally think that a scheme for the proper control of the liquor sold outside the locations and compounds would be more to the point, and it would have the effect of destroying illicit selling entirely. There is no doubt that compounds and locations are not more to blame than the outside trade, as the many cases of outside captures published in the papers of late will show. There has been a great deal of criticism levelled at the mines in connection with the death rate among tropical natives. The death rate has certainly been very deplorable, but before attaching so much blame to the mines it would be only fair to know what is the natural death rate of tropical boys in their own country. This is a question which has been repeatedly asked, but as yet no answer has been given—and one can only conclude that those who know do not want to say. There is no doubt, however, that there has been great effort made by medical officers and managers of mines to do all that is possible to preserve the health of these natives.

Sunday Observance Commission.

You will notice in the report that a Sunday Observance Commission is still deliberating on the question of Sunday labour, and it is interesting to note that the Commission does not shirk doing Sunday work itself, in order to obtain reliable information.

Accidents on Mines.

In this connection I think managers get the chief blame for the high accident rate on the mines, but unless you can blame managers for the scarcity of efficient miners on the Rand, I think it is hardly fair that they should be so universally accused, for it is a fact that we are forced to employ large numbers of inexperienced men who do not know how to take care of themselves properly underground, and it would take an army of inspectors to provide for each inefficient man to be stood over to see that he runs himself into no danger. Two of the most prolific causes of accidents are the fall of hanging wall and the blasting accident. In the first case a dangerous hanging wall in the Rand formation is very often most difficult to detect, and gives little warning, and even the most experienced and careful miner may fail to recognise the danger; the inexperienced seldom look for it. In the second case, as doubtless you are aware, carelessness has been bred by familiarity, and there have been several cases where the native has warned white men of a "schelm" and yet the warning has been ignored, with fatal results. A great deal has been said during the past year about the insecurity of tenure of workmen on the mines, and it may be said in passing that it is not only the workmen who suffer in this connection. While all are heartily agreed that a more settled class of labour would probably lead to better efficiency, it must not be forgotten that the blame for the absence of security must be partly laid on the men themselves, especially on those employed as miners. As I have already pointed out, owing to the scarcity of good men, the mines are compelled to employ what they can get, and take on men who under other circumstances could never get a job. While the changes on the mines are large, and the figures quoted on several occasions are pretty near the mark, if an analysis of these changes could be made it would be found that they are largely due to the shifting about of one particular class of men, *i.e.*, the inefficient miner, and that if this class could be replaced by efficient men the changes would not be so numerous. In support of this, as you know, the changes among surface men are very few compared with the miner, probably for the reason that surface men are mostly made up of mechanics and tradesmen who have had to serve a long apprenticeship, and are therefore more or less efficient in their work. Of course, this is not the only cause of changes, and cases of hardship to men for being "fired" do occur in this country as in every other, but the fact remains that the chief cause is the lack of efficient men to fill the requirements of the mines, and as long as this supply is short so long will changes continue.

Working Costs.

As predicted by your retiring president at the last annual meeting of the association, working costs have gone up. For a year or two previous to that time low working costs were the very height of fashion, but that fashion, like all others, has gone out during the last year. In my opinion there are too many new fangied ideas started on the Rand, and the mines nearly always have to suffer for them. Increased working costs, however, are a serious matter, and one that generally has to be explained somehow, and I think there are several excuses for the increase in this respect, such as (1) the increase in native wages; (2) native change house construction and maintenance; (3) increased compensation to natives; (4) the native compound expenses, especially with regard to food, etc.; (5) the new mining regulations; (6) shorter hours of work. But probably a cause equal to any of the above is the result of the low working costs craze, during which the proper maintenance of the mine was sacrificed to the desire to be in the fashion, and the past year has had to pay the penalty for the neglect. The old-time principles of mining cannot be altogether departed from, and the pack instead of the pillar system, which has been so very fashionable on the Rand of late, may perhaps also be partly to blame for higher working costs.

Miners' Phthisis.

Perhaps the most gratifying feature of the year's work is the fight which has been put up to counteract the causes of miners' phthisis, and I would like to say that while the thanks of the whole mining community are due to the Government, the medical faculty, and others who are striving to assist in the matter, I feel that it is hardly fair that the managers should have come in for such adverse criticism at the hand of short-time experts when it is remembered that they have been working for many years in the same direction.

Co-operation of the Men.

The greatest good, however, has been done in the passing of regulations which now give a manager a means of enforcing ordinary precautions to be adopted by the workmen themselves, as it is palpable that without the latter's cooperation nothing can be achieved. I believe myself that conditions underground to-day in this connection are more satisfactory than they have ever been, and though the statistics show an appalling number of deaths due to phthisis, it must be remembered that these were probably due to the contraction of the disease many years ago, and that the benefits of the precautions which are being taken now will only show gradually. In conclusion, I would like to remark that the meetings of the association are not so well attended as could be wished, and to point out that many members seem to think that their obligation to the association ceases when they have paid their subscriptions, whereas, in reality, by neglecting to attend meetings they are depriving the others of the benefit of their opinion on many subjects. The business of the meetings can only be better carried on by a strongly representative gathering, but I have also noticed that when there is a largely attended meeting, there is always some interesting and useful discussion which crops up, and if members would bring their problems and extraordinary experiences for friendly and informal discussion it would be a help to themselves, to the association, and to the mining industry. Gentlemen, I now beg to move the adoption of the report and accounts. The report was adopted. Mr. R. C. Warriner (Crown Mines) was elected president, and Mr. J. R. Thom (Apex Mines, Ltd.) vice-president for the ensuing year. The following gentlemen were elected as the Council for the year 1912: Messrs. E. H. Bulman, P. Cazalet, F. B. Lewis, C. H. Spencer, G. A. Chalkley, J. M. L. Henry, H. G. Nitch, A. J. Walton, P. Carter, J. H. Addie and G. D. Brown. The meeting concluded with votes of thanks to the scrutineers and to the retiring president, vice-president and council.

PROGRESS IN CYANIDATION OF GOLD AND SILVER ORES DURING 1911.—III.

An Interesting Summary of Metallurgical Advance—New Mills and New Processes—South Africa Well to the Front.

[By Alfred James.]

The following extracts have been taken from Mr. Alfred James' contribution to the *Mining and Scientific Press Annual*:—

Amalgamation.—In parallel with the practice of concentration ascribed to F. L. Bosqui in this review of last year, whereby the tables immediately after the battery were omitted and concentration limited to vanners or slimers after the tube-mills, several mills in South Africa do away with plates after the mortar-boxes and rely on after tube-mill amalgamation only. It has been foreseen that plates after the mortar-boxes would have to go, because the coarse-crushing now taking place in the mortar-boxes yields fragmentary pulp quite unsuitable for amalgamation on plates, but this removal of the battery plates in no way obviates the difficulty of the effect of cyanide solutions on amalgamated plates, and W. A. Caldecott avoids this by his scheme of dewatering and adding cyanide solution after the tube-mill tables. C. W. Merrill, similarly, at the Dome, is unable, by reason of his employment of amalgamating plates, to avail himself of any advantage arising from crushing in cyanide solution, and either dewaters his slimed pulp prior to agitation or does not introduce cyanide solution until the pulp is in his press. The Caldecott system yields a beautifully separated and dry (10% moisture?) product adapted to his special requirement—the adding of cyanide solution with as little dilution as possible—but it is questionable whether a valveless table is the most satisfactory or economical method of accomplishing this object. A waste of vacuum at the scraper and a wear and tear of cloths seems inevitable, and possibly a continuous filter of the Askin Nicholas-Oliver type would be more satisfactory in the long run. A recent advertisement shows that J. V. N. Dorr has fitted a vacuum-filter to the bottom of his well-known classifier, presumably to give a dryer product. Mr. Argall, at Stratton's Independence, classifies and dewaters his pulp down to 15 to 20% moisture, treating 200 tons per day with ½ h.p. By means of two screen-conveyors he presses the sand and withdraws it with considerable control of fineness of particles and dryness. For thickening slime-pulp the Dorr type thickener, and its last variant, the El Tigre, holds the field by reason of its simplicity, its low operation and maintenance cost, and its efficiency. For dewatering slime-pulp the Oliver type filter is probably as convenient as any other apparatus. The method of filtering (dewatering) slime by squeezing it in a folded belt between rollers, described in this review for 1909, is still being experimented with in Australia, and the latest development has been recently described in the *Journal* of the Western Australian Chamber of Mines. A considerable amount of work has recently taken place in South Africa and Australia on systems of dewatering slime by assisted settlement such as that included in the Way-Arbuckle Benoni plant, or that described so fully by Gardner in the May *Journal* of the Western Australian Chamber of Mines. This system depends on the acceleration produced in settlement resulting from the employment of a series of parallel corrugated sheets placed at an angle of, say, 45° to the surface and continuing for some distance (18 in.) below. The corrugations are stated to regulate the flow of descending slime and ascending clarified water without interfering with the settlement of the rest of the pulp. At the Sons of Gwalia an experimental plant is stated to have improved the thickness of the pulp from 26 to 41 per cent.

Clarifying Solutions.—E. J. Sweetland, the Treadwell staff, and C. W. Merrill have all invented presses for clarifying solutions with flowing or sluicing off of the sediment. It is perhaps too early to predicate as to the success of these presses; this must to a considerable extent depend on the nature of the suspended matter in the solutions to be clarified. At the Santa Gertrudis recourse is had to sand filters: the well-known Dehne (hand-cleaned) clarifier was specified for the Palmarejo mine, but at the last moment sand filters have been substituted here also.

Crushing.—The race of the Rand to heavier stamps has received a serious check, and the City Deep mill does not appear to be entirely satisfactory. Indeed, the Nissen stamp is reported to have shown up remarkably well against this 'last word' in Rand mills. It may be assumed that for the present Rand practice will for the future assimilate itself more closely to the Mexican and New Zealand practice of increased ratio of tube-mill to stamp. Unfortunately, no figures of performance are available. It was known that the overloaded and over-revolved Rand tube-mills almost immediately after their original installation passed the margin whereby crushing capacity at the then standard of fineness could be more economically increased by addition of tube-mills rather than of stamps, but on the other hand, the increased fineness resulting from tube-mill grinding has brought about increased extraction and sent up the Rand standard of fineness from 60 mesh to 90 mesh. Indeed, the greatest opponent of tube-mills on the Rand is apparently at last convinced, and has not only laid down a record ratio of tube-mills to stamps for the Rand at the Benoni, but it looks as if the New Kleinfontein plant itself was following suit on the same lines. We may thus take it that, in spite of the greater horse-power used in grinding through tube-mills, the practice is one that pays. In this review reference has been previously made to the low ratio, 2 to 4% of tube-mills to stamps prevailing on the Rand as against 16.6 and even 20% elsewhere. An instructive table is given in the *South African Mining Journal* for September 2. It shows that the mills with a tube-mill to stamp ratio of about 1:18.5 crush from 11 to 20 tons per head per diem; when the ratio is 1:20 the output is from 10 to 13 tons per diem; with a ratio of 1:25 the output descends to from 9 to 10½ tons per diem, and those with only 1 tube-mill to 30 or more stamps show only 8 to 9½ tons per diem; but the value of the table is diminished by absence of any note of the weight of the stamps or of the total horse-power employed. The trial of the Nissen stamp at the City Deep has provided some extraordinary results; it would scarcely be too much to ascribe a superiority of over 30% in crushing capacity, weight for weight, for less horse-power and repairs, and that, too, taking a considerably coarser feed.[*] It is evident from the above results that a limit will be put to the development of heavy stamps in batteries of 5 heads per mortar-box, as the heavier the head the greater should be the area of shoe and die. A noteworthy point is made by J. W. Hutchinson,[†] who states that instead of increasing the Goldfield Consolidated mill by 40 stamps and 3 tube-mills as originally proposed, they obtained the desired output by the addition of 6 Chilean mills only between the existing stamps and tubes. Battery-screens of 4 mesh were substituted for the existing 12 mesh with a resulting duty of 8½ tons per head. This scheme saved a month's time, $100,000 in money, and yet increased the capacity of the plant by 40 per cent.

(To be continued.)

---

[*] *S.A. Mining Journal*, November 4. 1911.

[†] *Mining and Scientific Press*, loc. cit

PREMIER (TRANSVAAL) DIAMONDS: RESULTS AT A GLANCE.

The following table gives the result of the Premier D.M.Co. at a glance :—

Year ending Oct. 31.	No. of Loads Washed.	No. of Carats Found.	Value of Diamonds.			Yield per Load.	Value per Carat.			Value per Load.			Cost of Production per Load Washed.	
			£	s.	d.	Carats.	£	s.	d.	£	s.	d.	s.	d.
1903 ...	76,931	99,208½	137,435	2	9	1.29	1	7	8.5	1	15	6.7	4	7.2
1904 ...	939,265	749,653½	886,030	0	5	.798	1	3	1.2	0	18	5.3	2	7.62
1905 ...	1,388,071	845,652	*994,687	5	7	.609	1	3	6.29	0	14	3.98	3	3.44
1906 ...	2,988,471	899,746	*1,277,739	6	4	.301	1	8	4.82	0	8	6.61	3	5.71
1907 ...	6,538,669	1,889,986¾	†1,702,630	19	8	.290	‡0	18	0.20	‡0	5	2.49	2	4.14
1908 ...	8,058,844	2,078,825¼	1,536,719	19	0	.258	‡0	14	9.40	‡0	3	9.75	1	10.24
1909 ...	7,517,793	1,872,136½	1,172,378	7	2	.249	0	12	6.29	0	3	1.43	1	11.42
1910 ...	9,331,882	2,145,832¾	1,496,641	5	5	.230	0	13	11.39	0	3	2.49	2	0.56
1911 ...	8,325,272	1,774,206	1,433,970	6	9	.213	0	16	1.97	0	3	5.34	2	2.02

* Includes Cullinan Diamond at nominal valuation. † Proceeds of Cullinan Diamond not included.
‡ Subject to the loss on contract with Diamond Syndicate.

RECENT "T.C.L." ACTIVITY.

Prospecting and Mining Results—Zaaiplaats Lease—Groenfontein Tin Mine—Nissen Stamps for the Rietfontein Property.

The directors' interim report for the period 1st October to 31st December, 1911, has the following, *inter alia* :—The activity in sales in Braamfontein Company, Limited, has not been maintained during the period under review, doubtless owing to the company having for the present discontinued its policy of making building loans. Mortgage bonds amounting to £1,550 have been repaid, and current mortgages have been reduced by £1,194 1s. 5d. The mortgage bonds and other advances account has also been increased by the sum of £900, representing balances due on properties sold, transferred from property account, such balances bearing interest, being secured by the properties themselves, and being reducible by periodical instalments in terms of the deed of sale. A further number of hitherto unoccupied farms have been leased. The company's cattle and ostrich farming operations continue to shew satisfactory results. There are at present no prospecting agreements in force in respect of the company's farms. Prospecting and development results on Witfontein, No. 371, and Newburg, No. 937, Waterberg district; Leeuwpoort, No. 938, Rustenburg district; Fairview claims, Barberton district; Florence and George's claims, Barberton district; Marico zinc workings; and the Butterfly-Cecil group, Rhodesia, continue to be satisfactory. It is proposed to exercise the option over 262 of the Fairview claims. Prospecting on Weynek, No. 763, Rustenburg, is still being carried on, but so far no definite results have been obtained. Rietfontein (T.C.L.), Limited: It has been decided to erect a plant consisting of 2 Nissen stamps (equal to 10 light stamps) with tube mill, and cyanide plant for sands and slimes, having a capacity of about 60 tons per day. The erection of this plant will be put in hand at once, and it is hoped that milling will be commenced about May, 1912. The Weynek Tin Company, Limited, has gone into liquidation. There is every prospect, therefore, of the lease being cancelled, and the ground reverting to this company. The last 50 feet of driving in the lowest level of the Mount Morgan mine, Barberton district, which has been unpayable, has averaged 6·7 dwts. over 90 inches, which would appear to indicate the presence in depth of the principal ore shoot, and after driving 400 feet through positively barren ground in the main adit, the reef is now showing 5·7 dwts. over 52 inches. On the other hand, a re-survey of the mine indicates considerable alterations in the relative positions of blocks previously estimated as payable, and will probably reduce their payable contents. Zaaiplaats Lease: The payable ore developed and at grass, amounting to 2,163 tons, has now been crushed at the Groenfontein mill in terms of the arrangement made with Government, the result being a profit on the milling operations of approximately £2,500. Up to the time when milling was commenced the expenditure upon the lease amounted to £8,728. This is therefore now reduced to approximately £6,228. Prospecting on lines of fissuring by means of diamond drilling will now be carried on with a view to locating further payable ore bodies. During the period under review, the Groenfontein mill has, with the exception of half a month, been utilised for crushing ore from the Zaaiplaats Lease, and, in the meantime, prospecting and development have been carried on actively with a view to creating satisfactory ore reserves before recommencing own milling operations. The Groenfontein Tin Mine has, therefore, for the time being ceased to be a revenue producer. The number of payable working faces at present existing is very few, but it is hoped that the hydraulicing operations which will shortly be in full swing will disclose new ore bodies. Considerable trouble has been met with during the quarter owing to defective pipes supplied, and it has been found necessary to totally replace a considerable section of the pipe-line, so that the hydraulicing plant will not be in proper working order until probably the end of February, 1912. It is proposed to erect a slimes plant to re-treat the accumulated residues showing payable values. The ore reserves at 31st December amounted to approximately 850 tons, estimated to contain 56 tons of 70 per cent. concentrates. In order to accumulate sufficient reserves to warrant running the whole plant full time, it is proposed for the time being to run 5 stamps only 10 hours per day, the recovery from which crushing, together with the recovery from the alluvial washing, will, it is hoped, produce a sufficient revenue to meet current expenses, including prospecting.

New Minerva Syndicate, Limited.

An extraordinary general meeting of shareholders of the New Minerva Syndicate, Limited, will be held at the Masonic Hotel, Germiston, at 8 p.m., on Wednesday, 28th February, 1912, to precede the ordinary general meeting convened for the same place and date. The extraordinary general meeting is called to ratify, by resolution, and Agreement of Sale, dated the 20th November, 1911, entered into as between the directors and the Henderika Tributors, by virtue of which the entire plant and assets of the company were disposed of for £1,015, and to confirm the action of the directors in distributing, in the form of dividends to shareholders, the proceeds of the sale.

THE GEOLOGY OF THE RAND.—II.

A Spirited Criticism of Dr. Mellor's Views—The Last Word not yet Said on the Subject—Some Important Points at Issue.

[By C. Baring Horwood.]

The discussion on Dr. E. T. Mellor's paper on "The Normal Section of the Lower Witwatersrand System" has drawn forth a paper by Mr. C. Baring Horwood, which was read at the last meeting of the Geological Society of South Africa. The following is the concluding portion :—

It is only necessary to assume that the same mistake has been made by the Survey in mapping the contorted bed on the southern side of Bzuidenhout Valley as Hospital Hill shale instead of Coronation shale, and the whole geology of the lower Witwatersrand System in this district becomes at once enormously simplified, and the necessity for assuming the presence of numerous faults, and the cutting out and frequent elimination of whole beds of considerable distances along the strike, is largely obviated; for example, there would then be no occasion for the Survey to assume that an important member like the Hospital Hill quartzites to the west of the Scottish Monument has been eliminated by faulting from a surface section taken near the Sanatorium; or from one to the east of the Monument near the Geldenhuis Mill. The quartzite ridge which is shown between these two points, enclosed between two diagonal faults, and again that to the east (extending from about one mile south of Rietfontein) then become Government Reef quartzite instead of Hospital Hill quartzite. Dr. Mellor admits the similarity of the upper portion of the former to the lower portion of the latter, and that, in fact, the characteristics of the one gradually merge into that of the other.

There is then no further reason to assume that the Langerman's Kop and Rietfontein series are unconformable. The western end of the latter is in much broken and faulted ground, and its extension is concealed by the diabase; but the eastern end of the former can be traced at intervals for about one and a half miles beyond Langerman's Kop, where it disappears (under the diabase which occupies most of the valley), striking towards Rietfontein. The Promise Reef series on the western Rand then occupies a corresponding position in the lower Witwatersrand System to that of the Rietfontein series. The former series was prospected by the Count de Waru on the farm Roodekrans No. 260. The writer had a copy of a report dated 12th September, 1905, by the late Dr. Carrick, made for a company who opened up some reefs on the far West Rand. In this report he correlates these reefs with those opened up by the Bertha Estate and Gold Mining Company on the farm Hartebeestfontein, No. 149; and by the Count de Waru on the farm Roodekrans, north of Witpoortje: and he also refers to the work done on this same line of reef on Sterkfontein. No. 84, and Honingklip No. 497. He points out that between Wilgespruit No. 489 and Sterkfontein the horizon in which this reef is situated is comparatively poorly represented as compared with the section further south extending to Blaauwbank No. 355. and that on Roodekrans, there is an absence of well-defined banket reefs in this horizon. He definitely states that in his opinion this reef series represents to Du Preez series of the East Rand. *and that geological evidence indicates the identity of the two reef series.*

Thus we have the Bertha Estate series of the far south-western, and far western Rand, connected up with the Sterkfontein, Du Preez reefs on Sterkfontein, with the Count de Waru's reefs on Roodekrans, and with Dr. Mellor's Promise Reefs at Witpoortje, Hamburg and Maraisburg; and with the Langerman's Kop beds of the Bezuidenhout Valley and with the Rietfontein series to the north of Germiston.* Dr. Mellor has traced the Government Reef and the Coronation shale, or West Rand shales from Witpoortje through Hamburg and Maraisburg, right up to Brixton. Further east, at Kensington, the Government Reef may also be seen, and is there in consequence of a strike fault (as Dr. Mellor has clearly shown on his map), brought up close to, and separated only by a few feet from, the magnetic-looking shale to the south of the Langerman's Kop beds. Although the contorted bed of the Hospital Hill slates lies to the north of it on the other side of the valley, Dr. Mellor has mapped in the former as the contorted bed of the Hospital Hill slates in spite of the fact that its horizon corresponds to that of the Coronation shale, which he has traced to Brixton, only a short distance to the west. To account for a ridge of quartzites which he maps as Hospital Hill quartzites (a little to the east he has cut off his longitudinal fault lying to the south of this shale band by a big oblique fault running north-west and south-east, although this shale band, according to his own map, crosses this oblique fault *unbroken*. It is not quite clear from his plan what is supposed to have occurred in this area, and it would be interesting if he would give us a section across it cutting the quartzite ridge (which he has mapped in as Hospital Hill quartzites), the shale band behind it, the Langerman's Kop beds, and the Hospital Hill quartzite and contorted beds of the Hospital Hill slates on the other side of the Valley. Does he account for these two contorted beds by duplication due to faulting? If so, if the Langerman's Kop beds are unconformable, this faulting must have taken place before the Langerman's Kop beds were faulted into their present position, as they are not duplicated.

In connection with the longitudinal fault described by Dr. Mellor—He states that the diabase has certainly partaken in the movement which has affected the other rocks; apparently, he implies by this that the faulting was not connected in any way with the diabase. It seems to the writer highly probable (especially when one considers the numerous longitudinal dykes composed of a diabase, which is sufficiently alike in general characters and chemical composition, to have been derived from the same magma as the Ventersdorp amygdaloidal diabase, and the dykes are certainly of sufficient age) that the diabase may have been the *direct cause* of much of this faulting, and the enormous mass of it to the south of the Witwatersrand, striking in the same direction as the Witwatersrand beds, certainly suggests that the present Klipriversberg Hills may be on the site of a fissure of eruption.

One argument which Dr. Mellor will doubtless bring forward against the theory now enunciated will be that the quartzites to the south of the Rietfontein series are Orange Grove quartzites; but here I join issue with him. According to the writer's interpretation of the geological record these quartzites should be mapped as belonging to the Government Reef series; and Dr. Mellor admits that the lower and upper beds of the Hospital Hill quartzites resemble the former and the latter respectively. Thus it is sometimes possible to mistake the former for the latter. As regards a broken outcrop of speckled bed which he found about the middle of the north side of the big Witkopje pan,† reference has already been made to his admission that a thin band of hard quartzite suggestive of the speckled bed, is sometimes found behind the Coronation shale, and it has already been pointed out that a speckled bed does occur behind these shales on the farm Elandsvlei No. 161. These quartzites have been carefully traced by the Survey past the eastern boundary of Witkopje, where they strike to the south-west, to the south of the Rietfontein Mines; this has been used by the Survey as an argument against the Rietfontein beds not being regularly interbedded between the Hospital Hill and Orange Grove quartzites, but if the writer's interpretation is correct, this argument no longer applies. The Survey report states that further west beyond the boundary of Witkopje while these outcrops are not so wide they are perhaps more conspicuous.

At the western extremity of this outcrop to the south of the No. 1 Shaft, near the Rietfontein homestead, they certainly bear little or no resemblance to the Orange Grove quartzites, which can be seen to the north-west near Bedford Farm as a prominent ridge. They do, however, resemble quartzites which outcrop just west of (that is below) the Coronation, or West Rand, shales in the big pan on the farm Hartebeestfontein No. 149 on the far West Rand. Dr. Mellor has evidently wisely been guided by the fact that no outcrops of quartzites occur to the north except those belonging to the Rietfontein series north of which everything is hidden by diabase, and has evidently not attempted to rely on being able to distinguish these quartzites by appearance from either Hospital Hill quartzites or from some occurring in the Government Reef series. It is just as easy and requires less assumptions to class these quartzites in the Government Reef series, and to assume that the Orange Grove quartzites and Hospital Hill series lie to the north, hidden from view by the amaygdaloidal diabase on the northern side of the Rietfontein Mines. Certainly both the Hospital Hill quartzites at the Observatory, the ripple marked quartzites near there, and the Orange Grove quartzites further east, near Bedford Farm, on the northern side of the valley, appear to be striking under the diabase in a direction that would bring them past the north side of the Rietfontein Mines; and not as if they were abruptly cut off by a diagonal fault, as suggested by Drs. Hatch and Corstorphine, whose argument for such a fault is, however, greatly weakened by the fact that what they have mapped as Ripple marked quartzites on the eastern side of this fault, and on the southern side of the valley, is in reality a continuation of the Langerman's Kop series; and the outcrops contain conglomerate beds, as anyone can easily verify for himself by going and looking at them. These Langerman's Kop beds on the south side of the valley also strike in the direction of the Rietfontein beds and gradually become covered up by the diabase. This being so, the normal position of the Orange Grove quartzites at Rietfontein will be below the diabase to the north of the mines.

In Dr. Mellor's last paper he refers to a section on the southern portion of the farm Rietfontein, No. 145, some two miles south-west of the Rietfontein Mines, in which he states that all the main horizons of the West Rand sections are recognisable from the contorted bed upwards. The writer knows this section and has examined it carefully, and his interpretation of it is that this contorted bed does not belong to the Hospital Hill slates, but is the Coronation shale, and the beds between it and the Main Reef belong to the Government Reef and Jeppestown series. He refers also to a complete view of this section, which can be seen at an old trench which runs parallel to the west of the farm Rietfontein. He says that the Coronation quartzites can be seen in this trench, as also the lowest of the Hospital Hill quartzites; but, he admits that with regard to the beds between this and the Coronation shale the section is not so complete. The writer has also examined this trench, and was unable to correlate any shales in it with those of the Coronation or West Rand shales.‡

---

* It is worthy of remark that "buckshot" pyrites similar to that which occurs at Rietfontein can be found in one at least of the Langerman's Kop banket reefs.

† "Some Structural Features of the Witwatersrand System," Trans. Geo. Soc. S.A. Vol xiv., 1911, p. 30.

If now a section be taken striking north-west from Malvern to the Observatory across Dr Mellor's map of the Bezuidenhout Valley, we have a section agreeing in all essentials with that of far West Rand section. Thus :—

Malvern-Observatory Section.		Far West Rand Section.
M.R.S.	=	Randfontein Series.
Hospital Hill Quartzites of Mellor	=	Quartzites belonging to the Government Reef Series.
Mellor's Contorted Bed of the Hospital Hill Series	=	West Rand Shale.
Langerman's Kop Beds	=	Promise, Bertha Estate Series, Sterkfontein-Du Preez Series.
Hospital Hill Quartzites	=	Hospital Hill Quartzites.
Hospital Hill Slates with Contorted Bed	=	Hospital Hill Slates with Contorted Bed (or upper portion of the Great Basement Shales of Carrick).

In conclusion, the writer would again mention the high appreciation which he has of the very valuable work done by the Survey; and expresses the hope that in offering these criticisms and an alternative reading of geology in the Bezuidenhout Valley and Rietfontein area that it will be understood that he has been prompted entirely by a desire to arrive at the truth, and not in any way as an attack on the Survey or any of its members. A large amount of geological work has been done on the Witwatersrand, which has been greatly helped by observations and facts recorded by actual mining and also by numerous prospecting operations. There seems to have been during the last few years a slight lull in geological activities in this area, which, however, have recently broken out afresh, and with renewed vigour. The amount of physical energy, and mental concentration, which has been, and is being directed, towards the unravelling of great and economically important questions concerning the geology of this rich gold field, amply aided during the past two years by the detailed work of the Survey, should result in a rich harvest and the elucidation of much that previously seemed obscure. It is too much to expect that any individual worker should be able to arrive at the whole truth and make no errors; but it should be possible by an intelligent review of the work representing the labours of all the various parties engaged in trying to solve the problem which the Witwatersrand offers, to eliminate the errors, and by co-ordinating the various facts to eventually arrive at the true interpretation of the geological record of what may be rightly termed the most imprtant gold mining centre the world has ever known. If this end is in any way advanced by the criticisms and suggestions offered in this paper the object of the writer will have been fully attained.

---

‡ A specimen from 100 yards east of the road leading from near Driefontein to Barrett's Rietfontein, where Dr. Mellor says this shale is best seen, was exhibited at the meeting, and specimens of West Rand shale from the pan on Hartebeestfontein No. 149, and from the Hospital Hill shales and contorted bed, just west of the homestead on Witfontein, No. 572, on the far West Rand.

National Diamonds.

At a meeting held in Johannesburg at the end of last week, shareholders of the National Diamond Syndicate approved a scheme under which the capital of the syndicate (£15,000) will be reduced by one-half, and subsequently increased to £27,500, "putting the syndicate on a business footing, and providing working capital." The prospects were reported to be good when the necessary development had been accomplished.

Swaziland in 1911.

Swaziland on May 7, 1911, was found to contain 4,260 acres of land under cultivation by Europeans, of which 871 acres were irrigated. More than half the total area was under maize, but seven acres were returned as under cotton and 87 acres as under tobacco. The farm crops for the year (Europeans only) included 438,519 lbs. of fruit, a ton of wattle bark, and 2,200 bundles of poles, 77,675 lbs. of tobacco, and large quantities of maize, cereals and oathay. The mining returns show that seven gold mines produced £57,986, and five tin mines yielded £45,688.

MINING MEN AND MATTERS.

Sir J. B. Robinson has arrived from Capetown.

* * * *

Mr. R. W. Schumacher returns from England this week.

* * * *

Mr. E. Renaud, of the Compagnie Française, arrived from Paris this week.

* * * *

Sir George Farrar, D.S.O., arrived this week from England by the Kinfauns Castle.

* * * *

The Marquess of Winchester will leave Bulawayo on Sunday for Johannesburg, en route to England.

* * * *

Among the passengers who sailed for England by the Walmer Castle this week were Lord Rossmore, Sir Abe Bailey, and Mr. J. W. Quinn.

* * * *

Under the presidency of Mr. R. C. Warriner, the annual dinner of the Mine Managers' Association takes place at the Rand Club this evening.

* * * *

Under the heading "Mining Men and Matters," we stated last week that Mr. J. W. Beatty has been appointed Assistant Manager of the Langlaagte Consolidated. The initials should be G. H., and not J. W.

* * * *

Mr. Gustav Imroth, managing director of the Johannesburg Consolidated Investment Company, Ltd., has been elected a director of the Premier (Transvaal) Diamond Mining Company, Ltd., and Mr. S. B. Joel has been appointed a member of the London Committee.

* * * *

Mr. H. O'K. Webber has severed his connection from the Compagnie Française. Besides being president of the Chamber of Mines, Mr. Webber has been acting chairman of the Witwatersrand Native Labour Association.

* * * *

A special general meeting of the South African Institution of Engineers will be held at the South African School of Mines on Saturday, when a paper entitled "The Evolution of Printing and Typesetting Machinery, 1400 to 1912," will be read by Mr. A. E. Blevins, of the *Transvaal Leader*.

* * * *

The directors of the Modderfontein "B" G. M. Co., have kindly extended an invitation to the South African Institution of Engineers to inspect the mine on Saturday, March 2nd. A special train will leave Park Station at 12.20, and will stop at all stations up to and including Boksburg; it will arrive at the points leading to the Modderfontein "B" Siding at 2.7 p.m., where it will be necessary to alight as it is but a few hundred yards from the mine office. Members travelling from stations west of Park can obtain concession vouchers by applying to the Secretary; these vouchers will enable them to obtain return tickets to Park at single fare. Luncheon cars will be attached to the special train. If a sufficient number desire to visit the underground workings, special arrangements will be made to accommodate them, provided that they give due notification to the Secretary beforehand.

MINING EXAMINATIONS.

Private individual tuition for Mine Managers', Mine Captains', Mine Surveyors', Mechanical Engineers' and Enginedrivers' Examinations, Practical Mathematics and Electrotechnics. Correspondence lessons where personal tuition is impossible.—E. J. MOYNIHAN, Consulting Engineer, 10, Anglo-Austrian Buildings, Box 2061, Johannesburg.

THE MANUFACTURE OF STEEL IN SOUTH AFRICA FROM SCRAP

Review of the Trade in Scrap—Sources and Value of the Material—Possibilities of the New Industry.

[By G. Halford Smith.]

The question has often been asked through the Press and otherwise "Why does the Government allow our immense accumulation of scrap iron and steel to be exported to Europe whilst the articles manufactured from the same scrap are imported from Europe at a high price? Why cannot the manufactured articles be made in the country?" This article is the result of some years' experience in the purchase and export of scrap to Europe on a large scale, and my remarks may be of interest in view of the probability of steel works being established in South Africa in the near future.

Scrap Shipped.

Until within the last 12 years or so mine managers and engineers were in the habit of getting rid of the scrap which seriously hampered their operations by throwing it down old winzes and shafts or transporting it to sites on which it was intended to deposit tailings and other "refuse." However, as the accumulations became large, dealers began to purchase this scrap and ship it to Europe, and the railways fixed a low rate for railage to the coast to facilitate its removal. Many thousands of tons of scrap have been collected on the Rand since the war and shipped abroad—principally to Italy—where it has been largely used in connection with the construction of men-of-war and Italy's mercantile marine. Italy is a maritime country and has a powerful navy and a large mercantile fleet. She builds most of her vessels in the country, but she has practically no ironstone and has consequently to depend for her raw material on scrap imported from abroad.

It has generally been assumed that vessels come to South Africa fully laden and have to either return empty and pay for ballast or take up cargoes at merely nominal freights. This is quite an erroneous notion. The rates from South Africa to Italy vary from 15s. to 25s. per ton, and it is difficult to obtain freight even at these prices. After allowing for cost of collecting the scrap and loading it on to trucks, railage to the coast, handling at the coast, freight, insurance, agency, and miscellaneous expenses, the margin of profit is small, in fact I understand that several large dealers have lost heavily during the last few years. Further, the fluctuation in the market value in Europe (which has varied as much as £1 per ton during the past few years), the risk of shipwreck, which means—as I know to my cost—the locking up thousands of pounds of capital for many months until the insurance company pays out, and other risks have to be borne in mind. Still, although the risks are considerable, a fair return on money invested and time spent has been earned by those who have exercised care and prudence in the business, and who have had ample capital to tide over untoward circumstances.

Local Uses of Mine Scrap.

During the past few years, when "working costs" have loomed so large on our local horizon, the managers and engineers of our mines have used much of the scrap on their properties for different purposes. For instance, old shoes and dies which used to form a large proportion of the scrap exported are now used for flooring workshops and other places where there is considerable traffic, also for lining ore bins; the ends of drills and jumpers are used for lining tube mills; old piping is used for fencing purposes, and in fact a considerable quantity of scrap that used to be available for export is not now available. From a careful estimate I made some time ago I think that the wrought iron and steel scrap output of the mines of the Rand—apart from demolished batteries and machinery—does not amount to more than about 2,000 tons per annum. The old accumulations that one used to rely on are nearly all cleared away, and managers, being relieved from the inconvenience of the presence of immense scrap heaps, and competition being keen between buyers, are able to get prices quite 100 per cent. higher than they got ten years ago.

Railway Scrap.

The above remarks apply to scrap from the mines of the Rand; they do not apply to the railway scrap, which forms the large bulk of the scrap output of South Africa. As the safety of life and limb on the railways depends largely on the use of the very best material for all purposes, as soon as any parts become worn they are discarded and replaced by new parts; whenever some improved apparatus is adopted, everything connected with the older apparatus has to be at once scrapped throughout the Union in order to avoid possible accidents through the using of old parts that do not fit in with the new apparatus; in fact, I have myself shipped many hundreds of unopened cases containing material that has not been used, but which has been scrapped for this reason. The output of scrap from the Union Railways will, I think run into quite 10,000 or more tons per annum, so that the total available scrap from the gold mines and railways, apart from demolished machinery, etc., will not amount to more than from 12,000 to 15,000 tons per annum. There are, of course, further sources from which scrap is obtained, viz., diamond mines, blacksmiths' and engineers' shops, etc., but the output from these is small.

History of the Present Enterprise.

Early in 1910 the late Transvaal Government called for offers for the erection of steel works in the country, and as an inducement undertook to so adjust railway rates or to impose an export duty on scrap as to make it unpayable to any longer export scrap iron and steel. They did as a matter of fact raise the railage on scrap for export from ½d. per ton per mile to 1d. per ton per mile, which has had the effect of entirely stopping the export except from coastal districts. A considerable quantity of railway scrap is, however, still being exported from districts near the coast, and the Railway Department has been forced to send thousands of tons of scrap from the interior to the coast and sell it there to relieve the congested state into which the stacking grounds were getting. The offer of one of the tenderers was accepted by the Union Government some months ago, but the tenderer failed to carry out his obligations, and it is understood that a similar agreement has been entered into by Government with another tenderer, who is endeavouring to raise the necessary capital for it in Germany.

The instalment of large steel works in South Africa, especially in the neighbourhood of the Rand, which is the principal market of the sub-continent, would afford employment to many workers and would benefit the country in many ways; on the other hand, the railways would lose the railage on scrap sent to the coast for export and on the finished articles imported from abroad. The Government has in view, however, the manufacture of iron and steel from the ores of the country, and if such an industry could be established the benefit to the community generally can scarcely be over-estimated. In the agreement with the promoters of the steel company above referred to, the Government has bound the company to perform certain experiments with this object in view within a specified time. The difficulty to be surmounted consists, I understand, in the presence of refractory ingredients in the ores themselves, which up to the present science has not been able to overcome, but this difficulty will doubtless disappear as further research is made; in fact, I am informed that with the use of cheap electric power the difficulty has actually been overcome in other countries already. The proposed site for the steel works is a Vereeniging, where a powerful electric plant is in course of erection by the Victoria Falls Company, so that there should be no difficulty in obtaining ample electric power at a reasonable cost.

LATEST FROM THE RIVER DIGGINGS.

January Returns—Mooifontein Output—New Areas Contribute.

The latest returns from the diamond diggings are satisfactory. The finds registered from the different diggings in the South-western Transvaal during January show a total of 6,034¼ carats, value £30,671 12s. 6d. Mooifontein contributed 4,352½ carats, value £21,074 15s.; Bloemhof, 958½ carats, value £5,752 17s. 6d.; Weltevreden, 310 carats, value £1,489 10s.; London, 155 carats, value £938; Modderkraal, 175 carats, value £883; Goedgenoeg, 50¼ carats, value £326; Kromellenboog, 15¾ carats, value £150; Schweizer-Reneke, 5½ carats, value £38; Christiana, 11 carats, value £16 10s.; and Vaalbosch, ¾ carat, value £3. Mooifontein's total comprised 580 returns, and of these 121 exceeded £50 in value; 45 being more than £100 in value, and including returns of £757, £656, £514 and £345. Some fine parcels of stones were included in the returns, viz., seven stones, 106¾ carats, value £584; four, 88½ carats, £471; three, 78 carats, £426; five, 96½ carats, £422. Seventeen other finds ranged in value from £100 to £195. From Bloemhof the returns numbered 293, of which 23 exceeded £50. Weltevreden included one stone of 11½ carats, value £170; London showed one diamond of 15½ carats, value £126, and another of 27¾ carats, value £160; and Modderkraal's highest returns were £288, £269, £141, £120, and £67. Additional returns for October, November, and December were made from several of the diggings, and with these increases the year 1911's total from all sources in the south-west has been increased to 37,853 carats, valued at £198,815. Some good finds during the present month have been reported from various diggings. Mooifontein has had a 50-carat stone; while Modderkraal's best find to date is a clear, well-shaped stone of 14¾ carats. Weltevreden, which has been showing good results during the prospecting work, was added to the number of proclaimed fields on Saturday, when it was declared open for pegging.

Pneumatogen Rescue Apparatus.

ADVANTAGES DESCRIBED.

A feature of the Mining Exhibition is the display of rescue appliances, and in this respect the Pneumatogen, exhibited by Messrs. Reunert & Lenz, is superior to any yet shown. This has been designed by Professor Dr. Bamberger, Dr. Bock and Mr. F. Wanz, and is protected by 26 patents. The idea which the inventors ever kept before them was to produce an apparatus of a minimum weight capable of giving a copious supply of oxygen. Long and tedious experiments brought forth the Pneumatogen in its present form, and the fact that over one thousand of these appliances are now in constant use in England and on the Continent is full proof of the success of the invention. The Pneumatogen is based on the principle of regenerating the oxygen required for breathing from the products of the exhaled breath, by means of filtering these through a layer of potassium-sodium-peroxide, whereby carbonic acid and water vapours are simultaneously absorbed. The action is as follows:—First the moisture from the exhaled breath acts on the potassium-sodium-peroxide, and forms caustic-potash, caustic soda and oxygen:

$$KNaO_3 + H_2O = KOH + NaOH + O_2$$

The carbon dioxide from the exhaled breath attacks the caustic potash and caustic soda already formed, and gives the double salt, potassium-sodium-carbonate, plus a little moisture:

$$CO_2 + NaOH + KOH = NaKCO_3 + H_2O$$

The carbon-dioxide from the exhaled breath acts upon the unconsumed particles of the potassium-sodium-peroxide, and forms this double salt, potassium-sodium-carbonate, plus oxygen:

$$CO_2 + KNaO_3 = NaKCO_3 + O_2$$

Thus the extraordinary advantage of this type of breathing apparatus is secured, namely, the capability of adapting the oxygen supply to the requirements of organism, as the generation of oxygen regulates itself automatically by the increased or decreased requirements of the user. The chief point about the Pneumatogen is its exceedingly low weight. The full apparatus weighs not more than 22 lbs., and this is so adjusted on the wearer's back that the weight is hardly felt at all. The apparatus is simple in construction, containing none of the complications so apparent in other types. There are no valves whatsoever, nor are injectors, manometers, or other mechanical devices used. No compressed oxygen is required. This frees the wearer from the necessary labour of carrying about the heavy oxygen cylinders, and also completely eliminates the serious danger resulting from spontaneous combustion of compressed oxygen. There being no mechanically acting parts whatsoever, and the apparatus requiring absolutely the smallest possible attention, it is evident that owing to its perfect simplicity, very little practice makes the user entirely conversant with the use of the apparatus. It is always ready for use, and can be kept for an indefinite time without loss of oxygen or detorioration. Another excellent feature of the apparatus is that the inhaled oxygen is perfectly cool. The Pneumatogen consists of two cartridges containing chemically bound oxygen (potassium-sodium-peroxide) for at least two hours' breathing, a thoroughly protected breathing bag made of best elastic material for storing the breathing air, a mouthpiece and nose clip with a saliva trap, and two protected breathing tubes which connect the cartridges and breathing bag with the mouthpiece equipment. Thus the apparatus is compact and comfortable to wear, and men with the equipment can pass through an opening 18 inches square. As stated above, its exceedingly low weight—22 lbs.—taken into consideration with its great efficiency, at once finds favour among users, and there should be a big demand for the Pneumatogen along the Reef. We understand it is intended to give a demonstration of the Pneumatogen during the time the Exhibition is open.

Sheba G.M. Co.

The board of directors have declared a second interim dividend of 5 per cent. on account of current year, payable on 2nd April to the shareholders on the books 4th March.

GOVERNMENT MINING ENGINEER ON MINE ACCIDENTS.

An Important Contribution—Valuable Figures and Facts—Estimates Examined and Corrected.

A paper read by Mr. R. N. Kotze, Government Mining Engineer of the Transvaal, before the Chemical, Metallurgical and Mining Society, on the question of mine accidents, contained the following :—Mr. Chilton's statement that our accident rate goes on increasing is not correct. This will be apparent if his table of death-rates is examined. If to it the death rate for 1911 be added, which is 3.76, a steady increase is not perceptible. On the contrary, the death-rate is improving, even if only slightly and irregularly. Mr. Chilton's further statement that we hold the ignoble distinction of possessing the highest accident rate of any mining district in the world is also incorrect. The following table shows the death rate per 1,000 employes in a number of countries for the year 1907-1909, and it will be observed that the Transvaal is not the greatest sinner :—

	1907.	1908.	1909.
Australia	1.31	1.36	0.93
Austria	1.23	1.01	1.10
Belgium	1.03	1.06	0.95
British Columbia	5.10	3.99	7.62
Canada	3.16	3.29	3.73
Cape Colony	2.29	2.35	1.25
France	1.24	1.08	1.38
Germany	2.36	2.56	2.13
Gold Coast	2.75	2.66	3.71
Hungary	1.07	1.73	2.47
India	0.90	1.50	1.42
Italy	1.90	1.29	1.31
Japan	2.71	1.55	2.35
Mexico	5.18	4.64	5.78
Natal	2.73	10.38	2.85
New South Wales	0.94	1.36	0.93
New Zealand	1.43	1.45	1.64
Orange Free State	2.00	1.56	1.12
Prussia	1.44	2.42	1.88
Queensland	0.75	2.02	1.99
Rhodesia	3.96	4.28	4.92
Saxony	1.60	1.30	1.81
Spain	2.30	2.28	2.31
Transvaal	4.58	4.03	5.32
United States America	4.66	3.42	3.35
Victoria	1.16	0.93	0.77
West Australia	2.41	2.32	1.85

The individual States of the United States employing more than 10,000 miners have the following death rates, the figures in parentheses showing the number of mines :—

		1907.	1908.	1909.
Alabama	(17,760)	7.20	5.86	7.26
Colorado	(11,472)	1.97	2.62	2.28
Illinois	(69,425)	2.62	2.58	2.93
Indiana	(20,937)	2.52	2.36	2.64
Iowa	(17,286)	2.63	1.93	1.56
Kansas	(12,359)	2.57	2.74	2.83
Kentucky	(16,903)	1.89	2.15	2.01
Ohio	(38,114)	3.27	2.23	2.45
Pennsylvania	(326,122)	4.30	3.50	3.10
Tennessee	(10,031)	2.72	2.99	5.36
W. Virginia	(55,433)	12.35	5.50	5.85

In this table also will be found mining districts, and not unimportant ones, which have a higher death rate than the Transvaal.

COMPARISON WITH ENGLAND.

Again, Mr. Chilton makes a comparison of the Transvaal with England on the tonnage basis and finds it humiliating. He states that in England the death rate per million tons raised was 1.116, while in the Transvaal it was 31.51. My own calculation gives me a death rate per million tons in England for 1910 of 6.4 for coal mines and 19.7 for metalliferous mines, as against the Witwatersrand metalliferous rate for 1909-10 of 31.5. For coal mines the Transvaal rate for that year was 6.2. There is, moreover, nothing to be gained by making comparisons on a basis which allows no true comparison, and the tonnage basis for England and the Transvaal respectively is such a basis. Coal mines predominate in England, and the tonnage of coal broken per man is much greater than that of quartz in a gold mine. The position in the Transvaal is bad enough without seeking to make it appear worse by inaccurate statements and unfair comparisons. I agree with Mr. Chilton's statements regarding hustle and the resulting accident rate, with this difference, that I would divide the mines into large and small rather than deep level and outcrop. I may, however, point out that hustle in itself is not necessarily conducive to accidents. In support of this I may point out that efficiency necessarily means a certain degree of hustle, and that some of the best run mines on the Rand have a low accident rate. It is obvious that this good result is secured by bustle of the right sort without sacrificing the necesary attention and time required for looking after safety. This again is the result of perfection of organiation, and of executive control—in a word, of good management which pays due regard both to the interests of shareholders and to the welfare of the employees. That is to say, given good management, you will have a lower accident rate. I will not, however, venture to reverse the statement.

SAFETY MEASURES.

Mr. Chilton suggests educating the miner by lectures on safety measures. When one views the comparative failure of the South African School of Mines in its efforts to promote mining classes along the reef, one may be pardoned for doubting the success of such a scheme. If employers and employed take practically no interest in a matter so closely affecting profits and pay as the improvement of the efficiency of the miner, what chance is there for the success of a similar method for merely reducing accidents? I wish it were otherwise, but human nature cannot be changed. Mr. Chilton's next suggestion is that roof inspectors be appointed. Mr. J. E. Vaughan has already criticised this suggestion and pointed out that in so far as it would remove responsibility for the security of his working place from the miner, the system would be faulty. But there is no necessity to go as far as this. The superimposition of the roof inspector over and above the miner should lead to good results. It should be his duty to effect a comprehensive examination of the roof and to supervise and perfect the work already done by the miner. If, however, the duties of Mr. Chilton's roof inspector be compared with those laid down in the new regulations for a shift boss, they will be found identical except that the shift boss has also other duties to perform. The suggestions made for the examination of the roof and for the reporting of such examinations are precisely those contemplated in regulation No. 161. Obviously the number of shift bosses must be sufficiently large, and their knowledge and experience sufficiently extensive to allow of effective supervision as contemplated. Mr. Chilton's final suggestion is that of systematic timbering. His remarks on this point would lead one to believe that this should be the rule on the Rand. I agree with this if Mr. Chilton will extend his systematic timbering to mean also systematic pillaring and packing.

CHANGES AND ACCIDENTS.

At the last meeting of the society, Dr. Macaulay quoted some figures showing the bearing which frequent changes in personnel had on the death rate. Since the compilation of these statistics, for suggesting which I have to thank Dr. Macaulay, a couple of belated mines have sent in their returns, and I am thus enabled to present the complete data for the producing mines of the Rand. These show that during the period January to June, 1911, the Rand employed on an average 22,180 white men, and that during that period there were 17,745 changes, or an average of 13.3 per cent. per month. The relation of changes to accidents is shown in the following table, which shows the monthly percentage of changes in personnel and the death rate per 1,000 employees :—

Changes.	July-Dec. 1910.	Jan.-June. 1911.
0.5 per cent.	0.93	3.47
6.10 per cent.	3.36	3.48
11.15 per cent.	4.03	3.73
16.20 per cent.	3.80	4.34
21.25 per cent.	5.00	4.96
26 per cent. and over	5.08	5.10

The simultaneous rise of the death rate and the change rate is very striking, but after the remarks of Dr. Macaulay. I need not labour the point any further.

IGNORANCE OF OUR MINERS.

A complete analysis of the reasons why the local accident rate is high compared with that of England would involve the production of a small volume. There can, however, be no doubt that the principal reason for the difference lies in the ignorance of our white and coloured miners and in the labour system that has grown up here. In English coal mines the miners do not work in large gangs, as is the case with our native labour, so that an accident on the average affects a smaller number of men. Further, each man is a trained miner of long experience, well qualified to look after his own safety, in addition to which his shift boss has before the commencement of the shift also examined the working place. In the Transvaal the white miner himself is generally a man who, instead of the lengthy and careful instruction in the art of mining by his father or some other relative or friend, has picked up mining in a more or less haphazard way. If he had to do only the work the native does now, he would possibly look after his own individual safety pretty nearly as well as the English miner, but instead of that he has to provide for the security of a large gang. He ought to have the same sense of responsibility and the same mature experience, and to devote the same attention to the work of safety as the shift boss or over-man in an English coal mine. Can it be maintained that he has these qualifications or that he is always permitted by the exigencies of his work to spend sufficient time on safety measures? And again compare the working miner in the Transvaal and in England. In the latter country he is, as already pointed out, a man who is the superior in mining knowledge of the local ganger, while in the Transvaal the working miner is an untutored savage, who rarely stays long enough in a mine to learn more than the most elementary precautions. If then our high accident rate is due principally to the ignorance of our white and native miners, one would naturally conclude that the best means to improve matters would be to dispel that ignorance. In respect of the native this is a well-nigh hopeless task, although something may be done even by having the natives instructed through the boss boys and the interpreters of the dangers of such things as handling explosives, drilling into misfires, entering the stope before the ganger, entering skipways and putting his head out of a skip. In respect of the white man I do not expect much will be gained by attempting to improve his knowledge by lectures or similar methods, since he will not attend them, but a great deal would be effected if a more thorough system of practical training were insisted upon than is the case now. The suggestion has been thrown out that the Mines Department might assist in this direction by making the mining qualifications for a blasting certificate more severe, but for various reasons I do not think the time has yet arrived for such a step. In the absence of an early improvement in the knowledge and experience of our white and native miners, one has to cast about for other remedial measures. I have already indicated one of these, which is that of placing more responsibility for safety upon men who have or should have a better knowledge of mining than the average miner. Other methods have been suggested by Mr. Chilton and those who have joined in the discussion on his paper. and the body of the Mining Regulations may be looked upon as a compendium, in condensed and legal phraseology, of what experience has dictated in this respect.

PLEA FOR THE MINER.

In conclusion, I wish to enlist some of your sympathy for the much abused miner, who frequently finds himself between the devil and the deep sea when the means for complying with regulations are denied him by the shift boss or other official. He has to run the risk either of being found out by the Inspector of Mines, with or without an accident, or of losing his job if he remonstrates too strenuously with the mine official, or if in an inquiry he gives evidence against the official. Unnecessary risks are run in such cases, but when something goes wrong, the miner is pretty sure to incur some penalty. Managers and mine captains can do a great deal of good, not only in reducing the accident rate, but also in improving the contentment amongst their men, by impressing on shift bosses that in the matter of complying with regulations, the miner has no cause for complaining that the means for doing so have been denied him The same rule applies to safety in this respect as to efficiency, namely, that the miner must not have to wait for or be deprived of his tools. As I have already indicated, the Rand can furnish numerous examples of the maxim that efficiency and safety on a mine march together.

MORE LIGHT ON THE E.R.P.M. POSITION.

Revaluation of Ore Reserves—Further Large Capital Expenditure Foreshadowed—Extracts from Mr. Ross Skinner's Report.

THE greatest interest is evinced in the meeting of the E.R.P.M., which is to be held on the 28th. In the meanwhile the papers, in the case of the Government versus Mr. Penlerick, have been sent to the Attorney-General, and the air has been full of rumours regarding Mr. Ross Skinner's report. As the full report, including the estimates of necessary capital expenditure, will be laid before the meeting next week, it will suffice to reproduce here the following official statement issued by the directors late last Friday night :—

As rumours are in circulation regarding nature of report of Superintendent Engineer for year ended December 31, 1911, to be presented to shareholders at annual meeting on February 28, the directors have deemed it advisable to immediately publish his comments under headings of "Ore Reserves" and "General."

ORE RESERVES.

Payable ore reserves at December 31, 1191, was estimated at 6,716,605 tons, value 6.9 dwts. over an estimated average stopping width of 55 inches. In addition to this tonnage there are also standing in mine 11,150,397 tons of an average value of 2.6 dwts., which represents accumulation of low grade ore developed since the commencement of operations. eduction in payable presreserve as compared with previous year accounted for chiefly by exclusion of all ore of a value of under 4.3 dwts. per ton, as against 3.1 dwts. for year 1910, the latter value now being considered too low. Even this increased limit of payability may not agree with the actual cost of working at the present time, but the figure has been taken in order to permit of inclusion of blocks of wide reef, which, it is anticipated, will be mined at lower cost than present average of mine. It should be noted that ore reserve tonnages and values this year are given on a mining and not, as in former years, on a milling width. Details of payable ore reserves and accumulation of unpayable ore developed in mine are given as follows :—Over 4.3 dwts., 6,716,605 tons, averaging 6.9 dwts. Under 4.3 dwts., 11,150,397 tons, averaging 2.6 dwts. Total, 17,867,002 tons, averaging 4.3 dwts.

GENERAL.

As will be seen from the particulars of the development operations for the past year, given in the former portion of this report, the payable ore developed shows a shortage of 841,000 tons when compared with the actual ore mined. This shortage is accounted for by the curtailment of development operations, for financial reasons, in the latter half of the year, and by the difficulty of securing sufficient development faces for the required amount of work. This difficulty of maintaining the ore reserve was, and is, most pronounced in the Angelo and Driefontein sections, where the number of development faces is inadequate to provide the necessary footage. Concentration of work on the sinking of the secondary inclines and development shafts is, therefore, imperative in order to obtain additional levels as rapidly as possible. It is estimated that the development faces now available in the two sections mentioned are capable of providing 59 per cent. of the tonnage required to replace the ore mined from those sections. It is true that additional development could be obtained by unwatering the Angelo Deep section down to the 27th level, but even this procedure would still leave an estimated shortage of 30 per cent The whole situation as regards the ore reserve has been accentuated by the low percentage of payable ore met with, especially in the Angelo section, where the records shows the proportion of payable ore for the year to have been 39 per cent. A further fact which has an important bearing on the future development of the western portion of your property is the probability, during the the present year, of meeting with the dyke, which is responsible for the large volume of water encountered in the adjoining mine of the Witwatersrand Deep. This dyke is known to have a course which will be intersected by the secondary shaft at present being sunk in the Driefontein section. Such an event would seriously restrict, if not altogether prevent, development operations until the necessary pumps are installed, for which emergency a pumping scheme is being prepared. As regards the eastern portion—i.e., the Cason and Comet sections—the position is more favourable, and it is likely that the ore-reserve may be maintained provided there is no decrease in the proportion of payable ore developed. It is, however, important that the Hercules shaft, which was stopped at a depth of 3,018 feet, should be sunk a further distance of at least 1,000 feet, whence a crosscut would connect with the 27th level drive east from the Angelo Deep, eastern shaft. An additional crosscut will be driven at a depth of 3,000 feet, to connect with the present 22nd level of the Comet, thereby facilitating the opening out of the ground between the 22nd and 27th levels. The resumption of sinking operations in the Hercules shaft will render it possible to exploit at an earlier date the ground in the eastern section of the property. As may be gathered from the published returns of the past few months, the mining policy has been materially altered. The method hitherto adopted by the management appears to have been to secure cheap tonnage, principally by mining huge quantities from the large bodies of low grade ore, which generally could only have been done at a loss. From investigations made it would appear that during 1911 at least 205,000 tons of rock were mined of an average value of under 1.9 dwts. from developed blocks of an original value of 2.5 dwts., and under; that from surface dumps 36,426 tons of low value were milled; and that during 19t0 and 1911, about half in each year 78,000 tons of waste filling are estimated to have been withdrawn from mine stopes. Such methods naturally resulted in obtaining a low working cost, but the penalty paid has been the rapid exhaustion of ore blocks of higher value so as to maintain grade. The future policy should be to eliminate as far as possible from mining operations all ore of an unpayable grade; such a procedure will tend to restrict tonnage and increase working costs, but ultimately must result in increased profits to the company. The value of ore milled should, under such a policy and over a period, approximate to the value of the payable ore reserve, varying, of course, according to the amount of waste rock sorted out. The estimates of probable capital expenditure for 1912 are being prepared and will be ready at an early date.

CERTIFICATED MINE MANAGER

With 20 years' experience in the Transvaal is open for engagement at the beginning of March. Excellent credentials and well recommended. Apply—B.L., c/o "S.A. Mining Journal," Box 963, Johannesburg.

RAND LABOUR AND HEALTH QUESTIONS.

Review by President of Chemical, Metallurgical, and Mining Society—Lessons from Oversea—Future of our Base Metals.

Mr. Charles B. Saner, M.I.M.M., M.I.M.E., delivered his presidential address to the members of the Chemical, Metallurgical, and Mining Society in the Lecture Theatre at the School of Mines on Saturday evening. Mr. Saner thought that mining engineers in South Africa were doing their best to exploit the boundless wealth of the country. Agriculture might be the backbone of a country, but the exploitation of its mineral wealth initiated its prosperity. Touching on general mining topics, the President said that during his recent visit to Europe he had noticed how far ahead European mining concerns were of South Africa in regard to the handling and transport of material. Dealing with the question of ventilation, the speaker referred to "that grave question of the prevention of dust." Dust was proving a terrible scourge to all underground workers, and it behoved everyone to do his best to enforce any regulations on the subject and to eliminate this drawback.

Phthisis.

Having paid a tribute to the Transvaal Miners' Phthisis Sanatorium at Springkell, Mr. Saner described the method of treatment adopted at the Brompton Hospital Phthisis Sanatorium at Frimley (England). The system, he said, served to harden the body, invigorate the mind, and to keep alive the spirit of independence. A hospital for cure was necessary; a large sanatorium should be erected at Government expense in some healthy country place in the Union. The speaker thought a huge experimental farm for white people would be a good thing; the convalescent miner would then be learning the elements of farming, and would perhaps go "back to the land" when he retired.

The Labour Problem.

On the labour question, Mr. Saner pointed out that many of the mines had now erected suitable accommodation for their employees, including change-houses with hot and cold water baths. The housing of South African mining employees compared favourably with the English practice, though the houses were not so well fitted up as those on the mines of Holland and Germany. In England, change-rooms and bath-rooms were conspicuous by their absence, while in Holland the other extreme had been reached. He considered that it would be a good thing if a complete change were insisted upon before a man entered the mine. The advancement and prosperity of the whole of the Union depended upon the unskilled labour supply, and that question merited the consideration of Parliament. At the present time the farmer and the miner were calling and searching for the native; he was begged of to come and work instead of having to seek employment as white men had to. Never since the repatriation of the Chinese had labour been plentiful in South Africa, and if there was not sufficient unskilled labour in the country, it would have to be imported under proper restrictions. He cared not whether it were black or yellow labour. While agreeing that much had been done to improve the accommodation for natives employed on the mines, Mr. Saner thought that the scheme of providing married quarters might, with profit, be more widely extended. The idle native would then become a regular worker, and his family, being reared in the atmosphere of labour, would soon acquire civilised habits, including a desire for work. The men actually handling the mines realised how difficult it was to do good work with crude material. They must have labour, and that labour must remain with them long enough to pay for its proper training. Regular labour meant expansion for the mining industry and the consequent prosperity of farming.

Base Metals.

Concluding, the President referred to the base metal industry. He would like to impress on all that they should not trust in gold alone. A great future had been predicted for base metals, and on them the richest country in the world was started. Why should it not be so with South Africa?

CORRESPONDENCE AND DISCUSSION.

The Water Cure for the Dust Evil.

To the Editor, *South African Mining Journal.*

In your issue dated February 10th, 1912, appears an article by C. Milverton Ford on "The Water Cure for the Dust Evil," from which it would appear that very little is known of the fresh water supply schemes of Hansen and Damrich approved of by the Mines Trials Committee about twelve months ago. The Mines Trials Committee went to some expense in furnishing descriptive blueprints to almost every mine on the Rand, and it was hoped that this would have the effect of according a wider introduction to the scheme than the above article shows to be the case. It may, therefore, be interesting to give here a brief outline of the system.

To commence with, no surface tank is required, neither are any tanks necessary until within 200 feet of the first level, and as in the average mine the first level is, say, 1,500 feet below the surface, it will be seen at once that a considerable reduction in cost of installation is represented by the Hansen and Damrich system. At this position of 200 feet above the first level the first tank is placed behind the timbers. On the first level another tank is fixed which supplies the second level, and so on to the bottom station. This system has been installed on one of the shafts of the Consolidated Langlaagte Mines, and it is now under consideration to instal a second system. It is fitted with 1¼in. pipes, and is capable of supplying 50,000 gallons per twenty-four hours. The system is operated by two electric bells, and these are under the control of the banksman, and in no way interfere with his ordinary duties. This scheme offers several advantages over others where the pipes are under pressure, and in cases where streams are found in the mine these can be utilised by arranging Tee pieces in the column and leading a pipe to the stream, raising the pipe, say, 10 feet. This arrangement would effect a considerable economy in the water service.

In conclusion, the available space in the shafts is very limited, which is a difficulty to be reckoned with in any system which proposes the erection of tanks at intervals down the shaft. In the Hansen and Damrich scheme there is no difficulty in this respect, as only one tank is necessary in the shaft, and this can generally be fixed behind the timbers.

DUST ALLAYER.

February 17, 1912.

Free State Diamonds.

The following returns have been gazetted of diamonds registered for the month of January:—

	Carats.	Value.		
Kroonstad	19,091	£18,216	0	0
Koffyfontein	5,744	11,797	17	6
Boshof	3,448½	3,448	10	0
Winburg	138¾	138	10	0

QUARTERLY REPORTS.

Witwatersrand Deep.

The report for the quarter ended 31st December, 1911, states :—245 stamps (221.78 ran), 4 tube mills and cyanide works. Milled, 104,770 tons. Expenditure :—Mining, £67,327 19s. 1d., cost per ton, 12s. 10.23d. ; development, £8,213 5s. 6d., cost per ton, 1s. 6.81d. ; tramming, crushing and sorting, £3,500 16s., cost per ton, 8.02d. ; milling, £12,910 19s. 2d., cost per ton, 2s. 5.58d. ; cyaniding sands, £5,714 5s. 4d., cost per ton, 1s. 1.09d. ; cyaniding slimes, £2,079 8s. 10d., cost per ton, 4.76d. ; general mine charges, £2,317 19s. 8d., cost per ton, 5.31d. ; general charges, £2,533 0s. 3d. ; cost pr ton, 5.80d. Total costs, £104,597 13s. 10d. ; 19s. 11.60d. Profit for the quarter, £45,648 9s. 7d. ; per ton, 8s. 8.57d. Revenue, £150,246 3s. 5d ; £1 8s. 8.17d. No allowance has been made in the above statement for interest on debentures or for the government tax on profits. Dividend :—On the 13th December, 1911, Dividend No. 12 of 10 per cent. (2s. per share) was declared for the six months ending 31st December, 1911, payable to shareholders registered on 31st December, 1911. The profits earned would have been sufficient to declare a dividend of 15 per cent., after providing for the cost of auxiliary pumping plant, but owing to the trouble with water, which is now being overcome, development has been restricted, and the Board considers it advisable to retain a cash balance to allow of the ore reserves being strengthened. The capital expenditure was as follows :—Shafts. £5,370 9s. 11d. ; buildings, machinery and plant £4,844 12s. 5d. Total, £10,215 1s. 4d. Milling.—Stamps running, 221.78 ; time run, 79.38 days ; 3.647 tube mills ran, 78.36 days ; tons crushed 104,770 ; duty per stamp, 5.95 tons ; yield in fine gold, 26.151.726 ozs. ; yield per ton crushed, 4.99 dwts. ; waste sorted, 12.825 tons 11.01 per cent.) Cyaniding (sands and slimes)—Sands treated, 64.341 tons ; slimes treated, 39.499 tons ; yield in fine gold, 9,836.670 ozs. ; cost per ton crushed, 1s. 5.85d. ; cost per ton treated, 1s. 6.01d. ; yield per ton crushed, 1.88 dwts. ; yield per ton treated, 1.89 dwts. Recovered from all sources employed per ton milled, 6.87 dwts. Mining.—Ore in bins, 1st October, 1911, 1,550 tons ; ore mined and from dump, 116,435 tons—117.985 tons ; waste sorted (11.01 per cent.) 12,825 tons—105,160 tons ; tons crushed, 104,770 ; ore in bins 1st January, 1912, 390 tons. Development—Driven, raised, sunk and cross-cut, 1,778 feet ; driving from stopes, 96 feet ; auxiliary shaft sinking, 62 feet ; total footage for quarter, 1,936 feet. Ore reserves—Payable ore developed during quarter, 19,285 tons. The ore reserves are now being recalculated as at the end of the year. General—The 18th level pumping station, which was submerged by the heavy inflow of water encountered on the 16th level in October, was recovered early in December, and all accumulated water has now been removed from the workings. Additional permanent pumps to cope with the increased flow are being installed and should be in operation before the end of January. These additions will bring the total pumping capacity up to 3,000,000 gallons per day. The water at all points is fully under control, the inflow on the 16th level being held back by a dam pending the completion of the additional pumping plant. The work of opening up the reef, south of the water course will shortly be resumed at the 15th level, and the water on the 16th level will be drained off as rapidly as possible. The time when work can be resumed on the 17th and 18th levels is dependent on the progress of the levels above The following official statements were published by the Board :—On the 9th November :—As foreshadowed in the official announcement of October 10, bailing operations have interfered with hoisting rock for the mill, consequently the tonnage for October is lower and working costs proportionately higher. The temporary pumping plant is running smoothly, and the water has been steadily reduced, and it is expected that the seventeenth level will be cleared by the end of the week The recovery of the seventeenth level should help the tonnage for the current month and unless something unforeseen happens the mine should be practically cleared of water by the end of November—that is to say, the permanent pumping plant on the eighteenth level, which is capable of dealing with normal inflow, should be in use. On the 9th December, 1911 :—The 18th level, which is the lowest level in the mine, has now been cleared of water, and the permanent pumping station on that level has been recovered.

City Deep.

The Directors' quarterly report for the three months ending, 31st December, 1911, states :—Mine.—Development Work : Number of feet driven, sunk and risen, exclusive of stopes, 3,407 feet. The reef disclosures were as follows : Main Reef Leader : Distance exposed, 2,149 feet ; width, 25 ins. ; assay value, 19.3 dwts. South Reef : Distance exposed, 104 feet ; width, 36 ins. ; assay value, 6.7 dwts. Stoping : Tonnage stoped, including ore obtained from developing faces, 86,570 tons. Ore Treatment.—The following were the results obtained from the reduction operations : Ore received from mine, 86,570 tons ; ore taken from surface dump, 51,917 tons ; total, 138,487 tons. Milling : Percentage of waste sorted out, 15.9 per cent. ; number of stamps in operation, 110 stamps ; average running time, 80 days ; ore milled, 116,730 tons ; milling duty per stamp per 24 hours, 13.3 tons ; yield, 26,759 ozs. fine ; yield per ton milled, 4.58 dwts. fine. Cyaniding.—Tons treated, 117,490 tons ; yield, 16,500 ozs. fine ; yield per ton treated, 2.81 dwts. fine. Summary of ore Treatment (on basis of tonnage milled).—Total yield : Milling, 26,759 ozs. fine (5.58 dwts. fine per ton) ; cyaniding, 16,500 ozs. fine (2.83 dwts. fine per ton) ; total, 43,259 ozs. fine (7.41 dwts. fine per ton). Working Expenditure and Revenue.—Working costs at mine, exclusive of development, £118,112 13s. 2d (£1 0s. 3d. per ton) ; development redemption, £11,673 (2s. per ton) ; head office expenses, £1,644 0s. 4d. (3d. per ton) ; total working expenses, £131,429 13s. 6d. (£1 2s. 6d. per ton) ; working profit, £49,840 0s. 10d. (8s. 7d. per ton) ; total revenue, £181,269 14s. 4d. (£1 11s. 1d. per ton) ; net profit, £51,302 18s. 2d. Note.—The 10 per cent. tax on profits due to the Government for the quarter is estimated to amount to £4,372. The capital expenditure for the quarter has amounted to £17,696 6s. 0d., exclusive of the proportion of an annuity of £6,560 0s. 0d. payable to the Government in respect of mining rights acquired under an area of 13.5451 claims. £11,794 profit was derived from dump tonnage milled and is included in the foregoing profit. The eleventh annual meeting of shareholders will be held in the board room, the Corner House, Johannesburg, on Wednesday, 20th March, 1912, at 3 p.m. It will be proposed at this meeting to adjourn until 30th May, 1912, at 3 p.m., in order to give shareholders ample opportunity of perusing and considering the report and accounts, which it is anticipated will be in the hands of shareholders about the 6th April, before deciding as to the disposal of their proxies. A special circular dealing with this subject has been addressed to shareholders.

Ferreira Deep.

During the December quarter the following results were attained at the Ferreira Deep :—Development, 2,253ft. ; reef disclosures—Main Reef, 92ft., width 8in., assay value 3.0 dwts. ; Main Reef Leader. 762ft., width 27in., assay value 18.1 dwts. ; South Reef 711ft., width 19in., assay value 23.6 dwts. ; ore milled 91,020 tons, gold won 47,499 ozs., equal to 10.44 dwts. per ton ; value £199,401, equal to 43s. 10d. per ton ; working costs £99,896, equal to 21s. 11d. per ton ; working profit £99,505, equal to 21s. 11d. per ton ; net sundry expenditure £633, net profit, £98,872 ; estimated profits tax £9,123. The capital expenditure for the quarter amounted to £2,012 8s. 3d. The current quarter's profit was reduced owing to great stringency of labour and to the caving of several of the better stopes during the month of November last, to which reference was made by the Chairman at the annual meeting, held on December 13. The work of recovering these stopes has been much more difficult than then appeared would be the case. Some of the stopes have already been re-opened and are again producing ore, but it has been found necessary in order to insure their safety, to increase greatly the proportion of packs of broken reef with which the hanging wall is supported. Not only does this necessitate the employment of a considerable amount of labour in this unproductive work, thereby reducing the force available for current operations, but much ore otherwise available for the mill is in addition temporarily retained underground in these packs. The labour at present available is insufficient to perform this necessary work and also to keep the mill fully supplied with ore. A return to the better profits made during September quarter is dependent both on a substantial increase of labour and the quantity of broken ore found necessary for the support of the hanging wall of the stopes. The labour position is now more promising, arrangements for an increase having been made.

Mine Surveyors' Examination.

IT is notified that the Commission of Examiners for Mine Surveyors' Certificates of Competency will hold the next Examination on WEDNESDAY, THURSDAY and FRIDAY, the

20th, 21st and 22nd March, 1912.

at 9 a.m., at the South African School of Mines and Technology, Eloff Street, Johannesburg, and also, if found necessary, at Dundee and Kimberley.

The prescribed form of application for Examination is obtainable, without payment, by applying to the Secretary to the Commissions of Examiners, P.O. Box 1132, Johannesburg.

Those wishing to enter for the Examination must send in their applications to reach the Secretary on or before the 6th March, 1912.

The following syllabus of Examination is published for general information, and a detailed copy thereof will be supplied on application to the Secretary.

Candidates will be examined in the following subjects ;—

1. Surveying.
2. Algebra, Geometry and Plane Trigonometry.
3. Geology.
4. Mine Valuation.
5. Legal knowledge.

The candidate shall be required to show a specimen plan, accompanied by an affidavit stating that he has executed the plan himself.

The above Examination may be followed by a trial survey.

Rhodesian Section.

LATEST MINING NEWS.

Champion Mine Values—Progress of the Abercorn Railway—Lonely Mine Outputs and Developments—Bucks Reef Rumours—The " D. Troop " Syndicate—Sources of Yield in 1911—The Globe and Phœnix Dividend—Wankie Colliery, a Further Reduction in Selling Price.

The Champion Mine, in the Umtali district, appears to be one of the most valuable assets of the Amalgamated Properties of Rhodesia, Limited, a company which has of late bulked largely in the public view. The development work carried out to date has disclosed widths and values of a very encouraging nature, although operations have been considerably hampered on account of water troubles. According to an official statement issued in respect of the operations for the year ending 30th June, 1911, the North Reef, which is situated in the eastern section of the property, has been opened up over a length of 375 feet along the strike, averaging 1 oz. over a width of 29 inches. The same reef has been further proved east and west by small shafts, justifyiug the assumption that the reef is traceable for over 1,500 feet, and along this stretch sampling has yielded an average return of approximately 12 dwts. across a width of 36 inches. The main shaft has reached the first level—150 feet—and a cross-cut which has been put out has encountered the reef, giving a value of 17 dwts. over a width of 31 inches. South Reef.—This line of reef is situated some 120 feet south of the north reef, and parallel to it. A strike of 100 feet has been proved, averaging 7·4 dwts. across 44 inches.

* * * *

The date when the Shamva Mine will commence crushing is, of course, largely dependent on the progress attained in construction of the Mazoe-Abercorn Railway. Operations there are now being rapidly pushed on with, and the construction of the earthworks is being carried on simultaneously at both ends. With no unforeseen difficulties arising, it is expected that the line will be completed and open to traffic at the end of the year, and, in anticipation of this, active preparations are proceeding at the Shamva Mine with a view to the transport and erection of treatment plant as soon as is practicable after the completion of the line.

* * * *

The Lonely Mine, which declared its first dividend last year, recorded a low output for December, and in explanation of this the following cable has been despatched to London:—Low output December due to short running, general overhauling of plant, and stoppage of tube mills to be re-lined. Manager completed his inspection and making favourable report on plant; this is now running much better. Tube mills capacity insufficient because find necessary to grind ore finer than appeared to be necessary from preliminary experiments on which plant was designed in order to get full extraction. Making arrangements installation of third tube mill. Balance of plant already sufficient capacity. Driving No. 6 level south and No. 7 level south both in rich ore, also winze from No. 7 level, which is 62 feet deep and opening up large rich reef; full width not exposed. Sinking impeded by water, but expect to sink 30 feet per month.

* * * *

Unfortunately, recent rumours regarding improved developments on the Bucks reef property have not been officially confirmed, and, at 3s. 9d. (buyers), the shares of the proprietary company touched their lowest level last week. The January output from the mine is stated as 472 ozs. from 660 tons crushed, and 61 ozs. from 506 tons treated by cyanide. The previous month's recovery was 217 ozs. from 530 tons milled and 45 ozs. from 384 tons cyanided.

* * * *

According to a Mashonaland correspondent of the *Rhodesia Mining Review*, " one of the oldest, if not the oldest, mining syndicates of Southern Rhodesia, viz., the ' D. Troop ' Syndicate, is, I hear, shortly to be wound up, and the proceeds of the sale of the ' D. Troop ' claims distributed amongst the shareholders. Needless to say that there are very few of the original shareholders, *i.e.*, members of ' D ' troop of the Pioneer Police, left. Congratulations to the few who, in spite of innumerable difficulties, have succeeded in holding on to the claims all these years. At the date these claims were pegged (1890-91), the Angwa river was a most inaccessible place. The writer well remembers the difficulties he encountered when, in 1894, he journeyed there to locate the beacons and put down a shaft on the Syndicate's property. On account of ' fly,' no oxen could be taken further than Spreckley's old camp, and native bearers had to be found to transport tools and provisions to the river, some 25 miles further. At the time I am writing of, game was abundant in this district. Herds of buffalo, elephant, sable, etc., were seen almost daily, and at night the grunting of lions was incessant. Of course, in those days, there was no possibility of disposing of the ground, no company would even look at it, it being situated so far away from all centres. Of late years the claims have been tributed, and the tributors are now exercising their option of purchase."

* * * *

It is interesting to note the sources from which gold was won in Rhodesia last year, and to contrast the outputs secured from plates, cyanide works, etc., with the sources of yield in the preceding twelve months. An examination of statistics shows that although 65,600 more tons were milled in 1910 than in 1911, the mill output last year was over 12,000 ozs. greater. As to cyaniding, a lesser tonnage of sand was treated, but the quantity of slime dealt with exhibits an increase. The following tables set forth the essential figures in this connection:—The yield of gold from Southern Rhodesia for the year 1911 amounted to 628,521·37 oz. fine, valued at £2,647,896. This is an increase of 18,566·06 ozs. in weight, and £79,698 in value as compared with the preceding year. The following summary shows the tonnage dealt with and the source of the production for two years:—

	1910.		1911.	
	Tons Treated.	Fine Ozs.	Tons Treated.	Fine Ozs.
From Milling	1,669,874	484,352	1,603,478	496,457
,, Sands	745,410	96,385	716,751	88,197
,, Slimes	102,690	13,257	127,085	21,775
,, Concentrates	4,480	14,835	5,738	19,881
,, other sources	—	4,719	—	2,211

* * * *

The directors of the Globe and Phœnix Company have issued a guarded statement relative to the rumours of a probable substantial reduction in the final dividend for the past year. The directors announce that they are not yet in a position to make any statement as to the recommendation which they will be able to make to the shareholders at the annual meeting in April, but so far as they can see there are no grounds for the rumours, provided no unexpected shortage of native labour occurs.

* * * *

A further reduction in the price of Wankie coal has been effected. It will be remembered that efforts have been made for some time past by the Rhodesia Chamber of Mines to influence a reduction in the price of Wankie coal. A reduction of 2s. per ton was announced to come into force on 1st January, 1911. The Committee urged a more appreciable reduction in the price, but it was pointed out that continuous negotiations had been carried on for some years past with the railway companies with a view to arriving at a workable scheme which would enable coal to be delivered at all stations at a reasonable price to consumers. These negotiations have now apparently reached a successful conclusion, as the announcement of a further considerable reduction has been made; this coming into force in January, 1912. The reductions indicate a price of 10s. per ton at pit's mouth, with modifications in the railway rates, which bring the total reduction in price of coal delivered at various points to a figure from 2s. to 4s. per ton lower than before. The following are the average pit's mouth prices of Wankie coal during the past three years:—1909, 12s. 10·18d.; 1910, 12s. 11·12d.; 1911, 11s. 4·56d. It is somewhat disappointing to learn that, despite these reductions, few new mines have been induced to abandon the use of wood fuel and burn coal.

MINING IN THE HARTLEY DISTRICT.

Big Mines Developing—Outputs of the Smaller Concerns.

The Hartley district of Mashonaland hitherto has enjoyed the distinction of being the home of the "small mine." In a sense, it appears that it is still entitled to claim a pre-eminence in the list of the most popular and successful tributing ventures and small syndicate districts of Rhodesia. And yet, in another way, it is in danger of losing this distinction, for a number of large propositions are rapidly developing around Hartley, Gatooma, and Gadzema; mines which give distinct promise of ranking amongst the very largest properties in the whole of Southern Rhodesia.

* * * *

As a matter of fact, the Cam and Motor mines on the Eiffel Flats are already considered by competent judges to constitute the second largest mining concern in the country—second only to the great Shamva mine near Abercorn, which has been truly described as a mountain of gold-bearing ore. The Cam and Motor originated from the efforts of two small parties of working owners, and it has rapidly developed into the chief asset of the London and Rhodesian Mining and Land Company, and a property which may, in fact, in the course of time, challenge the claim of the Shamva to the distinction of the leading gold mine of Africa north of the Limpopo River. The ore reserves standing developed in the properties to-day may be roughly estimated at one million tons of an average assay value approximating to 11 dwts. per ton. The question of design and capacity of plant is now being thoroughly investigated, and with a view to arriving at something like finality in this direction an experimental plant is at work. During January 496 tons were treated by this equipment, and a return of 191.6 ozs. was obtained.

* * * *

The ore body in the Motor Mine is of exceptional width, and has all the appearance of enduring to a great depth. Working costs, there is every reason to think, will be kept down at a low level, and every possible endeavour is being made to ensure a maximum of extraction.

* * * *

Another Hartley district property which promises to become one of Rhodesia's leading mines is the Eileen Alannah, recently floated by the Willoughby's Consolidated Company. This mine, like the Cam and Motor, had its beginning in a very small way, but it is clear from Mr. Ackermann's report that the proposition has ability to earn substantial profits. At the present moment the only work proceeding in this mine is in respect of development.

* * * *

As to the smaller mines of the district, the following table of January outputs and tonnages crushed may be found of interest:—

		Tons.	Ozs. Bullion.
Concession		2,616	661·93
Glencairn	mill	432	485·37
,, ...	tailings	800	146·84
Mabels Luck	mill	524	358·97
,, ...	tailings	288	84·52
Shepherds	mill	780	269·78
,, ...	tailings	420	180·70
Heathfield	mill	250	210·06
Owl	mill	1,125	632·00
,, ...	clean-up	—	233·00
,, ...	tailings	825	269·00
Goodsman	mill	74	106·15
St. Olives, No. 2 ...	mill	24	59·75
Pickstone East	mill	396	502·05
,, ...	tailings	206	71·72
Blue Rock	mill	216	171·10
,, ...	tailings	299	123·93

Bucks Reef.

The secretary advises the following particulars of last month's output, viz.:—Tons crushed, 664; yield, £2,225 14s. 9d.; profit, £216 19s. 9d.

The report for the quarter ended 31st December, 1911, states: that five stamps and cyanide works dealt with 2,024 tons. Expenditure—Mining, 1,637 14s. 4d., per ton 16s. 2d.; development, £2,110 6s. 6d., per ton £1 0s. 10d.; milling, £1,042 0s. 5d., per ton 10s. 4d.; cyaniding, £467 19s. 4d., per ton 4s. 7d.; royalty, £119 19s. 3d., per ton 1s. 3d.; general mine charges, £358 1s. 3d.; per ton 3s. 6d.; general charges, £244 15s. per ton 2s. 5d.; total costs, £5,980 16s. 1d., per ton £2 19s. 1d.; loss for quarter, £1,405 5s. 2d., per ton, 13s. 11d.; revenue, £4,575 10s. 11d., per ton £2 5s. 2d. The capital expenditure for the quarter ended 31st December, 1911, amounted to £883 16s. 6d. Milling—Stamps running (average number), 5; time run, 70.75 days; tons crushed, 2,024; duty per stamp per day, 5.7 tons; yield in fine gold, 921.41 ozs.; yield per ton crushed in fine gold, 9.10 dwts. Cyaniding—Tons treated, 1,501 tons; yield in fine gold, 179.96 ozs.; cost per ton crushed, 4s. 7d.; cost per ton treated, 6s. 3d.; yield per ton crushed, 1.78 dwts.; yield per ton treated, 2.39 dwts.; recovered from all sources employed per ton milled (fine gold), 10.88 dwts. Development (summary)—The following footages were accomplished for the quarter ended 31st December, 1911:—Bucks—Shaft sinking, 39 feet; driving, winzing and raising, etc., 332 feet; Prestwood—Shaft sinking, nil; driving, winzing and raising, etc., 68 feet. Total shaft sinking, 39 feet; total driving, winding and raising, etc., 400 feet; sum total, 439 feet. Bucks Footage.—The 2nd Level West has been extended 56 feet to a total of 462 feet from Main Shaft. The reef which was encountered at 361 feet continued to 430 feet, thus exposing 70 feet of reef, which averages 34.8 dwts. over 28 inches. From 430 feet to 462 feet (the face) there is no solid body of reef. At 415 feet from main shaft a raise has been put up 49 feet above 2nd level. The reef exposed in the 2nd level continued in the raise for a distance of 6 feet only, after which there was nothing exposed but a few stringers. The 8th level has been extended 38 feet to the west, thus making a total of 75 feet of reef exposed, which gives value of 34.0 dwts. over 25.2 inches. Prestwood footage.—The 4th level has been driven 53 feet to a total of 131 feet, of which 102 feet is on reef, giving value 47.3 dwts. over 13.5 inches. Ore reserves are being re-calculated for the annual report.

THE WEEK IN THE SHAREMARKET.

Better on Bear Covering—Little Improvement Expected Till Present Difficulties Surmounted.

WHATEVER little buying marked the close of the week is attributed to bear covering. Until the E.R.P.M. troubles are over, it is not to be expected that any genuine activity will be seen. The meeting promises to prove the event of the coming week, and will no doubt attract enormous attention here and oversea. Labour is reported to be coming in well, and the promise of a satisfactory Budget speech from Mr. Hull gives some encouragement. Changes and rumours of changes, as the result of E.R.P.M. disclosures, fill the air, and until the present critical and trying times are through the bears must have it all their own way. Despite the excellent balance sheet presented by the Pretoria Portland Cement Company, the shares have been marked down this week. Enquiries reveal that the danger of competition from within South Africa are as remote as ever. Wolhuters were a shilling lower on Friday, for no ascertainable reason. T.G.M.E.'s were not strengthened by the official explanation of the recent weakness. Tin shares continue to go unsupported; but a halt to their sagging is now overdue. The few changes of the week are reflected below.

	* Friday, 16th.	* Sat., 17th.	* Monday, 19th.	* Tuesday, 20th.	Wed., 21st.	Thurs. 22nd.
African Farms ...	16 0	15 9B	15 9	15 6	15 3	15 3B
Aurora West ...	...	7 6B	7 6B	...	..	...
Apex Mines ...	30 0B	...	31 0B	...	29 6B	30 0S
Bantjes Consolidated	24 6	24 0	24 0B	24 0B	23 9B	24 0B
Benouis	7 0	6 9	6 6	5 6B	5 6S	5 3B
Blaauwbosch ...	13 0B	13 0	..	12 3S	14 0B	14 0
Bushveld Tins ...	0 7B	0 8B	0 7B	0 9B	...	0 9
Brakpan Mines ...	52 0B	52 0B	...	52 0B	52 6B	53 0B
British S.A. ...	...	...	...	...	...	28 0B
City and Suburban ...	49 0	48 6B	49 3B	49 0B	49 0S	49 3B
City Deeps	49 0B	48 0	47 6	47 6	47 0	47 0B
Cloverfield Mines ...	4 3B	..	4 3B	4 5	4 0B	4 3B
Cons. Langlaagtes ...	18 9B	18 0	18 9B	18 0	18 0	...
Cons. Main Reefs ...	17 9	17 9	17 9B	17 9	17 6	17 6S
Clydesdales	10 0B	10 0B	10 0B	10 0B	10 0B	11 0B
Coronation Freeholds	0 7B	..	..	0 6B	0 6B	0 6B
Concrete Cons. ...	...	15 0S	14 0S	...	...	...
Con. Investment ..	20 0B	...	20 6B	...	25 6S	...
Crown Mines ...	...	130 0B	130 0	125 0B	...	...
East Rand Cent. ...	8 0S	7 9B	7 6B	7 6B	8 0S	8 0S
East Rand Coals ...	2 4B	2 5B	2 5	2 4B	2 6	2 4B
East Rand Deeps ...	1 9B	...	...	...	...	...
East Rand Props. ..	51 6	51 0	51 6	51 0B	49 3	50 0B
East Rand Deb. ...	£96	£95	£93	£90	£89	£87
Eastern Gold Mines	1 9B	1 9B	2 0S	1 9B	1 9B	1 9B
Govt. Areas... ...	21 9B	22 0B	22 3	21 6B	21 6B	21 9B
Glencoe (Natal) Colls.	...	6 4B	6 0B	6 0B	6 0B	6 4B
Glynn's Lydenburgs	30 0B	32 6B	32 6B	...	32 6B	...
Glencairns	...	...	..	..	..	4 0B
Geldenhuis Deeps ...	...	35 0B	37 6B	37 6B	..	35 0B
Ginsbergs	...	...	...	...	...	31 0S
General Minings ...	20 0B	20 0B	20 0B	20 0B	20 0B	20 0B
Jumpers	10 0B	10 0B	10 0	10 6S	...	...
Jupiters	9 6B	9 9B	9 6B	9 6B	10 0	9 6B
Kaalfontein Diamonds	0 6B	...	0 7S	...	0 6B	0 6B
Klerksdorp Props. ...	3 0B	3 0B	3 0B	3 0B	3 0	3 0B
Knight Centrals ...	13 0	13 0B	13 0B	12 6B	12 6B	13 0B
Knights Deeps ...	...	...	45 0B	...	45 0B	...
Lace Props.	3 0B	2 9B	...	3 0	2 6B	...
Lydenburg Gold Farm	8 6	8 6	8 6B	8 6B	8 6	8 7B
Main Reef Wests ...	27 6B	...	27 6B	27 6B	27 0B	27 6B
Modder B's	52 0B	52 0B	52 6B	52 0B	51 6B	51 9B
Midas Deeps ...	1 2B	1 4	1 3B	1 3	1 3B	1 3B
Middelvlei Estates...	2 1B	2 0B	2 0B	...	1 10B	1 9B
New Eras	6 0B	5 9B	6 0	5 9B	5 9B	6 0B
New Kleinfonteins ..	27 6B	27 0B	27 0B	27 6B	26 6B	27 6S
New Rietfonteins ...	11 3B	11 3B	11 3B	11 3B	11 6	11 3B
New Heriots ..	94 0S	...	94 0S	90 0B	94 0S	90 0S

B Buyers. S Sellers.

	Friday, 16th.	Sat., 17th.	Monday, 19th.	Tuesday, 20th.	Wed., 21st.	Thurs. 22nd.
New Unifieds ...	19 0S	19 0S	19 0S	19 0S	19 0S	19 0S
New Boksburgs ...	...	1 0B	...	...	1 0B	1 3B
Orange Diamonds ..	1 10B	1 10B	1 9B	1 11S	1 9B	1 9B
Pretoria Cement Co.	51 6B	53 0S	53 6B	54 0	52 6B	54 0S
Premiers Def. 2s. 6d.	182 6B	...	185 0B	...	...	...
Princess	...	10 0B	...	...	12 0B	...
Rand Nucleus ...	2 11B	2 9B	2 9B	3 0S	2 9B	2 10B
Randfontein Estates	32 6	32 3B	32 0B	31 9B	31 3	31 6B
Rooiberg Minerals	25 3B	25 0B	25 3B	25 3	24 9B	24 9B
Rand Klip	3 6B	3 6B	3 6B	3 9	...	3 6B
Ryan Nigels ..	4 0B	4 0B	4 0	...	3 6B	3 6B
Robinson Deeps ...	53 6S	53 6S	53 6S	53 6S	53 6S	...
Rood. Durban Deeps	23 9B	24 6B	...	..	32 6S	30 0B
Simmer Deeps ...	3 0B	...	3 6B	...	...	3 0
South African Lands	4 3B	4 5	4 4	4 2B	4 2B	4 4
S. Randfontein Deeps	2 10B	3 0B	3 1	3 0B	3 0B	3 0
Sub Nigels	6 3B	6 0B	6 6B	6 3B	6 3B	6 3B
S. A. Breweries ...	38 6B	...	38 6B	38 6B	38 6B	...
Springs Mines ...	8 6B	8 6B	8 9	8 3B	8 6B	8 6
Swaziland Tins	41 6	40 0B	40 0B	..	...	41 6S
Trans. G.M. Estates	43 6	42 3	42 0B	41 6	40 6	40 9B
Temple Tins	2 9B	...	2 10B	3 0B	3 0B	3 0B
Trans. Coal Trusts...	34 0B	34 6S	34 0S	34 3B	34 6B	34 6B
Van Ryn Deeps ...	7 7B	7 6B	7 5	7 3B	7 0	7 3
Village Deeps ...	41 0B	41 0B	41 3B	41 0	...	40 6B
Vogel. Cons. Deeps...	1 9B	1 7B	1 6B	...	1 8B	..
Voorspoed Diamonds	16 6B	...	...	16 0B	17 0S	16 0B
Witbank Collieries...	42 6B	42 6B	43 6B	42 6B	44 6	...
Wolhuters	23 3B	23 6	23 3B	23 3	23 0B	23 0B
Wit. Deeps	42 6B	45 0B	45 0B	45 0B	45 0B	46 6
West Rand Con. ...	...	...	7 6B	...	...	...
Zaaiplaats	60 0B	60 0B	60 0B	60 0	57 6S	55 3B

B Buyers. S Sellers.

Companies in Jeopardy.

The Acting Registrar of Companies gives notice, in accordance with section 196 (3) of the Companies Act (No. 31 of 1909), that at the expiration of three months from this date the names of the undermentioned companies will, unless cause is shown to the contrary, be struck off the register, and that the companies will be dissolved in terms of sub-section 5 of the Companies Act:—

229. Iron Crown Reef Gold Mining Co., Ltd.
942. Buffelsdoorn Consolidated Gold Mining Co., Ltd.
2727. South African Jewish Chronicle Publishing Syndicate, Ltd.
2968. The Bourke's Luck Gold Mining Co., Ltd.
3185. Randfontein Township Syndicate, Ltd.
3207. Vaalwater Syndicate, Ltd.
3746. Cameron Syndicate, Ltd.

ECONOMY IN FUEL.

Users of coal for domestic business or steam-raising purposes are now recognizing the saving of time and money effected by using only the best Transvaal coal and this coal is mined from the Vaalbank (Middelburg) Colliery.

This coal which can be obtained at about the same price as inferior coal, gives the highest heating value of any Transvaal coal, burns regularly and gives a minimum of ash or soot, and the fact that a trial order is always followed by repeat orders confirms the favourable opinions expressed by the present users of the coal.

Supplies of Vaalbank coal can be obtained from:—Johannesburg—A. E. Dunstone, Box 5034; The Holmes, Darcy Coal Agency, Box 5176; Benoni—Lindsay & Pirie, Box 5; Unsted & Holland, Box 316; Webb & Co., Box 370; Boksburg—J. D. Campbell, 105, Commissioner Street; Germiston—C. A. Margach, Box 223; Heidelberg—L. Lowenstein, Box 175; Bloemhof—J. Leviton; Kimberley—A. G. Freeman, Box 154; Pretoria—R. Butler & Co, Box 747; J. Franklin, Box 51; Middelburg—H. Laver & Co., Box 94; Lydenburg—M. McGee, Box 24; Pilgrim's Rest—J. H. Alcock, Box 36; Barberton—D. Wasserberg & Co., Box 167; Delagoa Bay—I. Sangiorgio-Borruso, Box 366; Pietersburg—B. Herman, Box 36

The Sandycroft Foundry Co.,

LIMITED,

INCORPORATED IN ENGLAND.

Tel. Add.: "Sancroft."
Telephone No. 360.

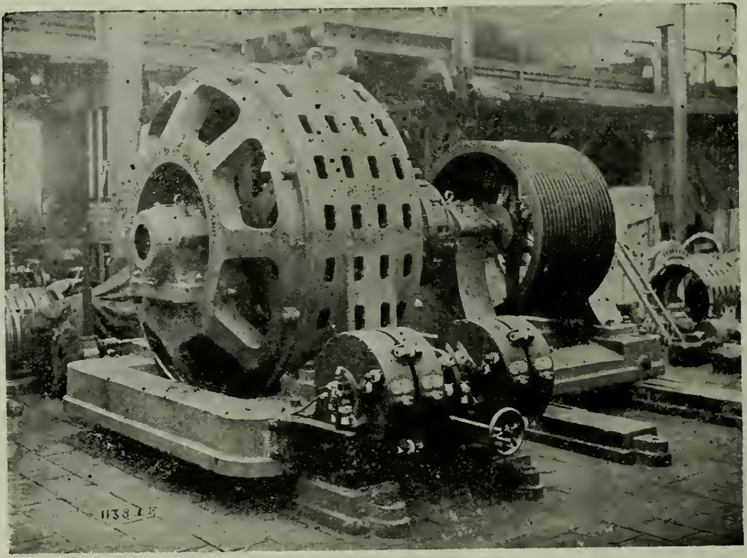
JOHANNESBURG.

P.O. Box 1976.
Offices: Corner House.

MAKERS OF

Electrical and Mechanical Machinery.

"CASCADE" INDUCTION MOTORS.



500 h.p., 2080 Volt, Single Speed Compressor Motor.

Single and Two-Speed "Cascade" Motors

High Starting Torque, Efficiency, and Power Factor at Both Speeds.

Agents for **Suckling Water Tube Boilers,**

Messrs. Yates & Thom, Messrs. Crossley Bros.,

Etc.

Engineering Notes and News.

New Municipal Generating Plant.

At the request of the Electrical Trade Section, the Committee of the Johannesburg Chamber of Commerce has communicated with the Town Council on the subject of the report of the Tramways and Lighting Committee on the recent tenders for additional generating plant. It has been asked that such report may be referred back to the Committee in order that a deputation may discuss certain points dealt with in the report.

A Unique Electrical Installation.

It is interesting to note that in the *Electrical Review* of January 12th, a special article is given on the 3-phase installation at the quarries and mines of the Buxton Lime Firms Co., in Derbyshire, while at the same time they mention that it is something of a unique electrical installation owing, in the first place, to the fact that it was the first in which a "Cascade" motor was used for mine haulage, and two-speed fan-driving, of the Hunt Patent Type, and, secondly, due to the employment of numerous "Cascade" motors for different classes of work, such as for crushing, milling, etc. A further interesting point in the article is the account of the drilling plant, this plant being of a purely electrical nature, the actual drilling machines being of the Marvin-Sandycroft double solenoid percussive type. The voltage used for these drills is 120 volts three wire transmission. The depth of holes drilled is from 18 to 20 feet. The Power Station is fitted up with Belliss and Morcom Sandycroft sets, the steam being generated from Stirling boilers, fitted with Underfeed Stokers, steam being delivered to the engines at 140 lbs. pressure. Mr. Williams-Ellis, the consulting engineer, gives the cost of power generated as approximately ·5d. per unit, while an actual saving of nearly 40 per cent. over the original cost of running the old isolated steam plants has been effected.

Electrical Engineers' Meeting.

A general meeting of the South African Institute of Electrical Engineers was held last week in the Lecture Theatre, South African School of Mines Building. Mr. J. H. Rider presided over a fair attendance. One member and seven associate members were elected. The following were admitted by the Council at its last meeting: Messrs. F. J. Booth, W. R. Dainty, F. L. Dobson, P. R. Rogers, E. E. Schweizer (associate) and A. J. Charlton (student). A paper by Mr. G. V. Adendorff was read in reply to the discussions on his address on the subject, "Atmospheric phenomena and their relation to the production of over-voltages in electric transmission lines." Mr. Pickles read a paper discussing an address by Mr. A. E. Gibbs on "Troubles of Cables." Speaking to a paper by Dr. W. Glucksman, previously read, Mr. W. Elsdon Dew said it would add greatly to the value of the paper if Dr. Glucksman would also give a few figures as to the annual increase in the manufacture of the artificial nitrates for the last few years. This subject was worthy of the consideration of South African politicians, as the country would require for agricultural purposes an ever increasing quantity of artificial manures, and that need should not be allowed to retard the development of the country if nitrates could be started.

The 'SISKOL' DRILLS
NOW BEING SHOWN
AT THE
MINING EXHIBITION
WILL BE
AT WORK
Between 3 and 5 o'clock,
ON SATURDAY AFTERNOON, 24TH INST.
International Channelling Machines, Ltd.,
(Incorporated in England),
2 and 3, Trust Buildings, Johannesburg.
PHONE 2643. TELEGRAMS : "SISKOL."

Ingersoll-Rand Catalogue.

This week we received a copy of the new Ingersoll-Rand Catalogue. It gives a description of all their machinery in general as applied to South African conditions, and should be of interest to anybody using air compressors, rock drills, coal-cutters, and pneumatic tools.

A New Invention to Prevent Accidents.

An invention has just been registered at the Patent Office, Pretoria, which is likely to be of the utmost importance to railway systems and travellers. It is a complete electrical device for the prevention of railway accidents through collision of trains, to provide for the automatic stopping of trains, and the ringing of alarm bells at level crossings or elsewhere. The complete specifications have just been accepted by the Registrar of Patents here, and the patent rights are secured to the inventor in this country, and have already been applied for in England, other British Colonies, and several foreign countries. The inventor of the device is Mr. Frederick Patterson, Claims Inspector, of the Pretoria Office of the S.A.R., and he is associated in the invention with Mr. T. E. James and Mr. E. Varean, who are also members of the S.A.R. staff here. Besides the great loss of life caused by railway accidents, a very considerable pecuniary loss is incurred each year by the Railway Administration through accidents on railway lines, which may be avoided by a system of this kind. The safety of the travelling public, of course, is the main object of such an invention, but its value to the Administration should be inestimable, having in view the large cost in rolling stock which the Administration is called upon to disburse annually because of preventable accidents on main and branch lines.

THE STOBIE PATENT RESPIRATOR

Only weighs half an ounce. Cheapest, most effective and comfortable in the market.

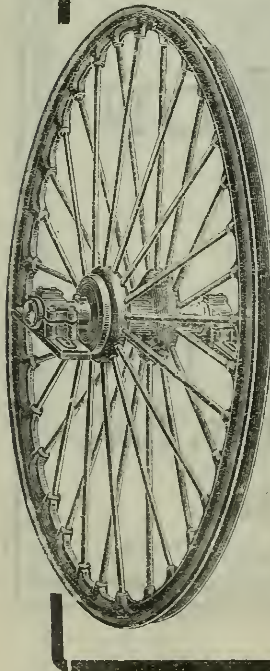
Order wholesale from Stobie Company (Ltd), Box 2321, Johannesburg or retail locally through your chemist.

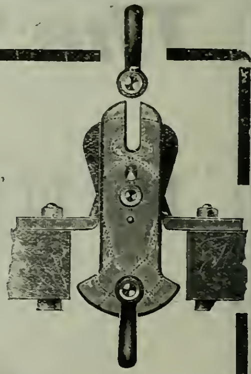
Miners' Phthisis prevented by the use of Stobie Resp rator.

To Advertisers & Subscribers.

Notice is hereby given that Mr. C. CARLYLE GALL'S connection with the S A. Mining Journal Syndicate, Ltd., has entirely ceased and any authority given to him to canvass for advertisements and collect monies on the Syndicate s behalf has been cancelled.

By order.





Latest Improvements in

Headgear Sheaves

Haulage & Brake Pulleys

Up to 25 feet in Diameter.

Mild Steel Built up Sheaves

Specially Suited for deep Mining, any Section or Load.

Safety Detaching Hooks A Speciality

Full particulars from: **THOMPSON & SOUTHWICK, LD.**

(Export Dept.) ENGINEERS,

Cables: "PULLEYS." TAMWORTH, England.

Finance, Commerce, and Industries.

Rand Building Activity.

The following is the cost of the Rand separate buildings or tenements, the plans of which were approved by the Municipal Council during January, 1912 (including alterations and additions):—January, 1912, £95,032; January, 1911, £122,984; seven months ending 31st January, 1912, £1,149,092; twelve months ending 30th June, 1911, £1,438,895; twelve months ending 30th June, 1910, £1,108,731; twelve months ending 30th June, 1909, £435,457.

* * * *

Railways and New Industries.

At the annual meeting of the Pretoria Chamber of Commerce, last week, Mr. Andrew Johnston, Mayor of the town, in his presidential speech, spoke strongly in support of a resolution on immigration passed by the congress of the South African Associated Chamber of Commerce. They wanted more men to leaven the present population of the Union. The question was not entirely an industrial one, but one which would ultimately effect the dominance of the white races of South Africa. He hoped the Government would make itself alive to its responsibilities in the matter before it, and give effect to the resolutions of the associated chambers without delay. Touching on the Government Department of Commerce and Industries, he said they looked to the Minister and his department for a development policy, which would mean the building up of industries in South Africa.

* * * *

Timber Trade Freights.

With reference to the recent increase in the rates on timber shipped from Finland, Swedish and Baltic ports (Norkoping excepted), the Committee of the Johannesburg Chamber of Commerce is supporting the Cape Town Chamber in making representations to the South African Merchants' Committee. It has been submitted that, apart from the increase in freights, the notice of five weeks is inadequate and unreasonable in view of the fact that contracts were in existence based on the lower rates; and that at least three months' notice should be given in future. The General Manager of the S.A.R., in a recent communication, asked the views of the Chamber upon a proposal to include Jarrah with the timbers grouped at 70 lbs. per cubic foot. The matter is receiving the attention of the Committee.

* * * *

Sir. Wm. Lever on the Fiscal Question.

A representative of the "Natal Advertiser" had the oprortunity of a hurried interview a few days ago at the Congella Works with Sir W. H. Lever, the founder and chairman of the well-known firm of Lever Bros., Ltd., of Port Sunlight, who is paying a flying visit to this country. Our representative (says the "Advertiser") found Sir William in the midst of busy consultations with the firm's managers in regard to business—many details of which require to be settled during his brief stay at Durban before leaving again by the mailboat on Thursday—and also with their local architect, with whom he was settling the plans of various projected extensions in order to provide increased accommodation at the works. When at last he was at liberty Sir William said this was his first visit to South Africa for seventeen years—his last visit being in 1895—and even during the short time he had been in the country—only arriving in Capetown last Tuesday and paying brief visits to Kimberley and Johannesburg—he is much impressed with the progress which has been made—particularly in Durban, and as to the great future which lies before the country, where they had such a wealth of material to their hands. Sir William, however, is a Liberal in politics, and also a strong freetrader, and is very much against the protective policy of this country, which, he said, if it is persevered in, will make South Africa the most expensive country to live in in the world. He emphasised the point that a government, prohibiting by its tariff a man from buying in any market he likes, also prohibits him from selling where he likes, a point which he thought South African tariff reformers were apt to lose sight of. He also considered the policy of protection could be carried to extremes in attempting to foster particular industries by protective duties before the country was in a position to supply its full requirements in that particular direction. Until they were in a position to do this the piling on of tariffs would have no effect except to increase the cost of living.

* * * *

Norwich Union—Record Year.

The new assurances completed during the past year by the Norwich Union Life Insurance Society exceeded all past records. Reviewing the results for the past year, the report, which is the one hundred and third issued, shows that the company have again enjoyed a year of continued prosperity and the new business surpassed all previous records, in fact not only was their own record broken, but the volume of business transacted constituted a British record for offices confining themselves to purely ordinary life business. The number of policies issued was 10,493 assuring the huge amount of £5,585,785 and carrying new premiums of £225,492, which, as mentioned, is largely in excess of the previous year's, the number of new policies exceeded the previous year by close on a thousand and the amount assured shows the fine expansion of over half a million sterling. As an idea of the world wide reputation this well-known office enjoys, it is well to mention that the new business transacted out of the United Kingdom was about 40 per cent. of the total reported above, or to be exact, 5,011 policies were issued, assuring £2,288,576 for new premiums of close on £90,000. In South Africa alone the new business amounted to close on the million pound sterling, which shows that even in such a difficult field for insurance, the Norwich Union can hold its own against all comers, and as the Chairman remarked at the recent meeting, they were justly proud of the business Mr. T. Alcock Dockrall, their General Manager in South Africa, had by his remarkable personality and strenuous work, built up for them. With the splendid increase in new business and the marked decrease in the matter of claims year after year, the prospects look very bright for increased bonuses.

E. J. MOYNIHAN,
CONSULTING ENGINEER.
PLANS, SPECIFICATIONS, REPORTS AND ADVICE, MINING EQUIPMENT, STRUCTURAL WORK AND FINANCIAL ADVICE.
10, ANGLO-AUSTRIAN BUILDINGS, Box 2361.

Henry R. Merton & Co.,
LIMITED,
2, Metal Exchange Buildings,
Leadenhall Avenue, London, E.C., ENGLAND.
Cable Address: "MERTON," London.
BUYERS of all Classes of Minerals, Ores of Copper, Tin, Silver, Lead, Zinc, Antimony, Wolfram, Concentrates, Bullion, etc.
South African Representatives—
Messrs. PARRY LEON & Co.,
Mercantile Buildings,
P.O. Box 1101,
Simmonds Street, JOHANNESBURG.

Our Twenty-First Birthday.

Unique Advertising Opportunities.

This year the "SOUTH AFRICAN MINING JOURNAL" celebrates its Twenty-First Birthday.

To mark the occasion a SPECIAL ANNIVERSARY ISSUE which will deal with every conceivable aspect of Mining, Metallurgy, Finance, Engineering, Railways, Harbours and Subsidiary Industries throughout the Sub-continent, will be issued in JUNE next.

The Leading Mining and Financial Men of Europe, Africa and America will contribute to this Special Number, which will Establish a RECORD in South African Illustrated Journalism.

WORLD-WIDE CIRCULATION IS ASSURED.

Do You Wish to Push Your Business?

Apply at once for Advertisement Rates to the

Manager, "S.A. Mining Journal,"

Box 418. **Telephone 913.**

119-126, Exploration Buildings, Johannesburg.

THE ADVERTISING SPACE IS LIMITED AND EARLY APPLICATION IS ESSENTIAL.

Contracts Open.

The Municipal Council of Johannesburg invites tenders for supply of steel face for Norwood refuse destructor, and ironwork for drainage subway; also for hydraulic lift at abattoirs, Newtown (March 6).

The Municipality of Pretoria invites tenders for the erection of the new fire station at the corner of Koch and Minnaar Streets (March 15).

The Town Clerk, Town Office, Bethlehem, invites tenders for the supply of the following electrical fittings: Poles, cross-arms, street fittings, wire, insulators, etc. (March 2).

The Secretary of the Bloemhof Health Board, Bloemhof, invites tenders for the carrying out of the sanitary work of the town (March 4).

The Municipality of Boksburg invites tenders for the supply and erection, at the Sanitary Compound, Farm Klipfontein, of one power chaff-cutter, complete, capable of cutting not less than 2 tons chaff ($\frac{3}{8}$in.) per hour, to be fitted with safety feeders, fly wheel cover, feeding web, and strap fork, one spare wheel, and 24 knives (March 15).

The Engineer-in-Chief, S.A.R. Offices, Johannesburg, invites tenders for the earthworks, masonry, and concrete between mileage 9 and 19 miles 17 chains (in three sections) on the Greytown-Krantzkop Railway (March 8).

The Secretary to the Tender Board, S.A.R. Headquarter Offices, Johannesburg, invites tenders for the supply, delivery and erection of a steel framed building, to form an extension of the Carriage Shops, Salt River (March 26); also for the supply of sweet grass hay and white mealies required for the Transvaal Province (Feb. 27).

The Chairman of the Tender Board, Provincial Secretary's Office, Bloemfontein, invites tenders for the erection of a bridge of two spans of 40 feet each, and one span of 100 feet, concrete abutments and piers, over the Groot Vet River, District Winburg, Orange Free State (March 18).

CYANIDE of SODIUM, 120 %
ZINC DUST, SHEETS and SHAVINGS.
MABOR FUSION CUPELS and MATERIAL.
3 STAR CRUCIBLES and CRUCIBLE BARS.
3 STAR LITHARGE.
HARDWOOD MINING POLES and SAWING TIMBER.
"BRUNSVIGA" Calculating Machines.

RICHARD HEYMANN & CO.,
73/5 Exploration Buildings.
P.O. Box 2425.
Telephone 351.
Telegrams: "Extra."

Situations Wanted.

Position as Mine Manager, in Transvaal, or any part of the World. Advertiser has Home Training, and 14 years experience in all branches of Gold Mining on the Rand. Holds Transvaal Mine Manager's and Surveyor's Certificates.

Apply, F.S.W., c/o this Office.

"To Medical Officers and Mine Managers." Advertiser, Life Experience Hospital Duties, Qualified Dispenser, is open to take charge of Native Hospital; first-class credentials. Apply, MEDICAL, c/o this Office.

By young Engineer just out, with thorough practical and theoretical training, position as Draughtsman, or charge machinery.

Reply "A" 87, Central News Agency, Johannesburg.

Our Twenty-First Anniversary Number.

THE LAST WORD ON RAND MINING.

To commemorate the twenty-first anniversary of the founding of this journal, a special number, distinct from the ordinary weekly issue, will be published early next June. Fittingly to mark the occasion, the number will contain a comprehensive and concise account of the past history, achievements and present position of every gold mine on the Rand, illustrated and brought down to the latest possible date. It will review the industry generally as well as in its several technical aspects, and will include articles by experts on the chemical, mining and metallurgical progress and problems of the fields. A feature will be made of the personal side of the industry, and a section will be devoted to its technical and administrative leaders, enriched with portraits and other illustrations. Engineering on the Rand in all its phases, electricity, steam and air power will be treated, and the growth and progress of electric power supply will be exhaustively discussed. The gold mines of the outside districts and the tin, copper and coal industries of those districts will be dealt with thoroughly and at first hand. The great diamond industry of South Africa will have a section to itself, and here, as in the treatment of the base metal industries, the letterpress will be embellished with many striking and original illustrations. Mining in the Cape, Natal and Orange Free State Provinces will also be reviewed and the undoubtedly great mineral potentialities of those, as yet undeveloped, areas will be graphically set forth. German South-West Africa will find a place in the issue and a first-hand account of the diamonds, the copper and the tin mines of that promising field will be included. Moreover, the banks and other great financial institutions, the railways and harbours of the sub-continent will be adequately dealt with, and the whole problem of transportation as it affects the inland industrial centres will be reviewed. In this connection Capetown, Port Elizabeth, Durban, East London, Delagoa Bay and Beira will be separately and fully treated and their claims examined. Apart from mining, there will be a considerable section devoted to a description of the several subsidiary industries dependent on mining for a market. Chief among these will be cement, explosives, soap and candle-making, milling and the hundred and one activities that centre in the Rand. Rhodesia and Mozambique will be given a separate and extended treatment. The different mines will be described and illustrated, and the recent progress of the industry in those territories dealt with comprehensively and lucidly. In addition, the issue will contain a number of interesting and valuable contributions from leading men in the mining and financial world, many of whom have already sent their congratulations on the decision to issue a special commemorative number of the journal. Numerous letters received from past Rand engineers and mine managers, now resident in all parts of the world, contain offer of contributions. These will form a unique collection of valuable views and reminiscences, and will considerably enhance the interest of the volume. The work will consist of upwards of 350 pages, printed throughout on art paper. Prizes are offered to artists for the best design of a suitable and striking character, and particulars are given in another part of this issue of other valuable prizes to be awarded in connection with the number. It may be added that the work will be prepared, produced and printed in South Africa, and will aim to cover the whole field of mining in this country, and to prove a fitting monument to the great industry with which, from the beginning, the *South African Mining Journal* has been associated. The co-operation of everyone interested in the industry is being enlisted to make the venture a success, and already it promises to mark an advance on anything of its kind ever before attempted in South African illustrated journalism.

INVESTORS' DIARY.

The following company meetings have been announced :—

Feb. 28.—East Rand Prop. Mines.
Feb. 29.—Worcester Exploration Co. (Worcester C.P.).
March 6.—Crown Mines.
March 7.—Rose Deep.
March 8.—National Bank (Pretoria); Geldenhuis Deep; Wit Deep; Cloverfield Mines.
March 12.—Durban Rood. Deep.
March 13.—Robinson G.M.
March 14.—Bantjes Con. Mines.
March 15.—Village Deep.
March 20.—City Deep; Lancaster West; May Consolidated; Anglo-French Coal Estates.
March 21.—Ferreira G.M.
March 22.—Modder "B"; Vogel Cons. Deep; Knight Central.
March 26.—Cassel Coal Co.
March 27.—Rand Mines; Modder Deep Levels; Princess Estate; Geduld Prop.; S.A. Gold Mines.
March 28.—East Rand Deep.
March 29.—Simmer Deep; Jupiter.
April 12.—Transvaal Consolidated Lands.
April 25.—Wit. Deep; Knight Central; Wolhuter; Treasury; Consolidated Main Reef; Main Reef West; Witbank Colliery; Vogelstruis Consolidated Deep; Cloverfield (Extraordinary General Meetings).
April 30.—New Era; Springs Mines; Brakpan Mines, Transvaal Coal Trust.
May 17.—Wit. Deep; Knight Central; Wolhuter; Treasury; Consolidated Main Reef; Main Reef West; Witbank Colliery; Vogelstruis Consolidated Deep (Extraordinary General Meetings).
May 22.—Apex Mines; New Kleinfontein.
May 23.—Benoni Consolidated.

Johannesburg Motor Garages and Suppliers of Motor Cars, Accessories, etc.

JUST ARRIVED—1912 MODELS

PHŒNIX AND VULCAN CARS

Trial Runs Arranged. Full Particulars from

REED'S GARAGE

GOVERNMENT SQUARE, JOHANNESBURG.

Phone 1434. P.O. Box 2720.

MOTOR COVER AND TUBE REPAIRS AND RETREADING.

For Expert treatment by the oldest firm of Tyre Specialists in South Africa send your work to

Johannesburg Vulcanizing Works,

Cr. Loveday and Marshall Streets.

P.O. Box 3912. Telephone 2304. Tel. Add.: "RETREAD."

Dunlop Repair Shop

SEND YOUR TYRES FOR REPAIR OR RETREADING

TO THE

MANUFACTURERS.

DUNLOP GROOVED TREADS (manufactured in our English Factory) Fitted to any make of cover.

Burst Covers and Tubes properly repaired.

Call and inspect samples of our work.

Dunlop Repair Works

83, BREE ST.,
JOHANNESBURG.
P.O. Box 6370.
'Phone 831.

When communicating with Advertisers kindly mention the

South African Mining Journal

If you do your Own Repairs —
Send your difficult Machine Work to

PILLANS Bros. & OWEN

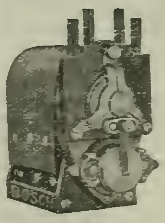
Mechanical & Electrical Engineers,

SAUER STREET, MARSHALL SQUARE,
JOHANNESBURG.

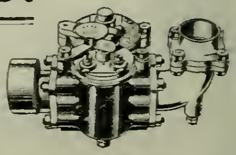
Cylinders and Crank Shafts Accurately Ground, and Bearings Remetaled. —

Accumulators Charged, Magnetos Fitted and Repaired Tyres and Tubes Vulcanized.

BOSCH MAGNETOS.



Bosch Magneto. Type D R. 4.



White & Poppe Carburettor.

WHITE & POPPE CARBURETTOR.

A large assortment of the latest types of Magnetos and Spares of all kinds Dual Ignition Coils (vertical and horizontal), Sparking Plugs, Bosch Patent Adjustable Lubricators.

Sole Representative for South Africa. **F. HOPPERT,**

Corner of Main and Simmonds Streets, JOHANNESBURG.

Telegraphic Address: "MAGNETOS." *P.O. Box 3503.* *Phone 3130.*

Automobile Notes.

Mining Men and Motor Cars.

It would probably be safe to assert that three out of every four motorists on the Rand are connected in one way or another with the mining industry, and, incidentally, it may be remarked, appear in the same proportion among our subscribers, thereby justifying the inclusion of an automobile section in this journal, the recognised official organ of the foregoing industry, and it is hoped that the "Notes" appearing from week to week have, in a measure, served to interest and alike instruct the many autoist readers. So much by way of foreword. It is, however, as an unrivalled advertising medium that it is proposed in this article to draw the attention of those who represent the South African motor industry, who, while desirous of extending their business interests in the sub-continent, may perchance not be aware of the immense field covered by this weekly journal, circulating throughout the Transvaal, Orange Free State, Natal, Cape Province, Rhodesia, Portuguese East Africa, and German South West Africa. Advertisers then will be well advised if they acquaint themselves with the journal's tariffs, which, to put it modestly, may be termed moderate, having regard to the wide and influential nature of its circulation, and reputation as a business-getter. Not in the nature of an untried proposition, therefore, is this paper recommended as an advertising medium to those connected with the automobile industry, but recognising that it is quite possible to under-estimate the value of any publication in this particular respect, without previous knowledge, it is obvious that value can only be determined from results obtained by others. To this end, therefore, a very special claim to recommendation attaches in the case of this journal, which has afforded ample opportunities of demonstrating the unique position it has occupied, from an advertising standpoint, during a period of favoured publication extending over two decades. Nor must the fact be forgotten that the motor industry is so largely dependent on the influential community who recognise the authority of this paper as final.

New Garages.

Chief among the unmistakable evidences on every hand, of the progress being maintained in the motor industry, are the new and enlarged premises which many motor traders feel it incumbent to erect in order to facilitate increasing business. It may surprise many outside automobile circles to learn that at present over thirty garages are established in Johannesburg to cater for the needs of the motorist community, the proprietors of these garages, who are invariably selling agents, representing the leading British and foreign motor car manufacturers. Now, for the information of prospective buyers it may here be stated that the local agents referred to must, in the majority of cases, be approached in respect to the purchase of a car; and further, the public should clearly understand that in the leading makes of cars, it is impossible, to use a trade aphorism, "to go behind the agent's back" and deal direct with the manufacturer, in the matter of purchase, as the latter is pledged to protect the representative's interests, and will, when such occasion arises, simply refer the enquirer to the nearest agent for the particular line in request. Much valuable time would be saved were this fact more widely known by those who, for pecuniary interests, endeavour to import motor cars direct. This protective provision, it is advisable to add, is adopted more especially by British manufacturers.

Agents' Influence.

Another point which has an important bearing on this subject is the agent's influence which is brought to bear upon the manufacturer, in the present day modifying of cars, many firms indeed consulting their agents periodically and gaining a valuable insight as to the peculiar requirements of the various countries. Recognising the difficulty, however, of a South African agent to meet and discuss with the principals of a firm his past year's experience of their cars, it is plain that any features to be retained or abandoned, as the case may be, in regard to design, etc., must be practically left to the discrimination of the agent on the spot, as no prudent manufacturer could afford to ignore the suggestions offered; therefore the individual who endeavours to procure for, say, colonial use, a car through channels other than the agent—granted the manufacturers will not supply—may find himself in possession of a car which does not conform to the conditions of the country, and is, therefore, unsuitable and fruitful of much disappointment, and probable extra expenditure in having matters righted. As pointed out, the only safe course to adopt is to order through the agent, who will gladly impart to the purchaser much useful information otherwise unattainable, besides indirectly sharing with him the benefits of his wide experience, which is embodied and reflected in the machine that he represents.

CONTINENTAL
THE WORLD'S LEADING TYRES.

FOR MOTOR CARS:
The Extra Heavy Square Tread Tyre;
The Tropical Renforcé Three Ribbed Tyre;
The Black Red Steel Studded, as used exclusively during the "Prince Henry Trophy" Race.

FOR MOTOR CYCLES:
The Extra Heavy Tyre, Ribbed Pattern;
The Rubber Studded, Non Slipping Tyre.

N.B.—All our Tyres are specially manufactured by our Home Company to suit the South African Climate and Roads, and stand UNSURPASSED in Quality.

STOCKS OBTAINABLE THROUGHOUT SOUTH AFRICA.

ALL MOTORISTS

SHOULD USE

TEXACO

PETROL

LOOK FOR OUR TRADE MARK.

RED STAR AND A GREEN T.

WE HAVE ONE BRAND ONLY.

—A—

High-Grade Motor Spirit,

THE BEST.

ASK AT ALL GARAGES FOR IT.

THE TEXAS COMPANY (S.A.) LTD.

T.A.C. Prize Giving.

Invitations have been issued by the Transvaal Automobile Club, to their members, on the request of the President and Mrs. J. Dowell Ellis, to the annual prize distribution, being held to-day at 3.30 p.m., at their residence, "Eastington," Yeoville. The venue of the presentation, given genial weather conditions, is sufficient to ensure the success of the function, apart from the remembrance of past events of this nature, so ably presided over by the present popular President.

The Aeroplane on the Rand.

The possibilities of the aeroplane on the Rand are no longer matter for conjecture, considering the magnificent aerial flights which are at present delighting the Johannesburg public, and the future exhibitions of the airmen will certainly be followed with the greatest interest. The biplane in use, it may be remarked, is practically a new machine, which was untried before the opening day of the meeting. Its successful performance is, therefore, all the more highly gratifying. The monoplane, however, has to its credit a non-stop flight from Paris to Rome, but to the Johannesburg public this feat is perhaps a secondary consideration, when compared with the achievements attained before their wondering eyes for the first time in these parts. Local "first impressions" have yet to be recorded in the realm of flight, but will no doubt reflect reassuringly as to the future possibilities, even at this rare altitude, of this intensely fascinating pursuit. The pastime at present is undoubtedly expensive, and outside of the professional ranks is not very seriously entertained, but once the leisured classes are initiated to the charm of the pursuit, and the risks which now deter are eliminated to a great degree by more perfect construction of the machines, there is every reason to believe that flying will then commence to be what motoring is to-day.

The Theft Nuisance.

Thefts of motor car accessories are increasing in an alarming manner in England, and how to put a stop to the impudence and daring of the perpetrators is having the serious attention of the authorities. It is apparent that nothing is more simple than the removal from unattended cars, especially at night, of parts easily of access, such as cushions, lamps, tools, rugs and overcoats, for which usually a claim on the insurance companies is seldom considered by the owner, although the thefts in themselves are very annoying. The practice is also common enough in Johannesburg, where unattended cars often suffer at the hands of the sneak thief: in fact, a youth was arraigned during the week, charged with attempting to dispose of a car, which fraudulently came into his possession. On account of his youth, however, the magistrate took a lenient view of the case, suspending the sentence inflicted. Theft of the actual car is a remote probability in these parts, as the disposal of it would constitute a difficult proceeding, but motorists should be on the alert for the individuals who are satisfied with appropriating fitments, and other portable details, which entail comparatively little risk of detection when being disposed of.

Tyre repairs and replacement are the most important of all expenses incident to the running of a motor vehicle, and the economically minded Johannesburg motorist at present is not quite satisfied with the results obtaining from the use of some tyres on the market. The tyre bill, it must be remembered, seems nowadays excessive, in comparison with the other expenses, which are diminishing owing to the more perfect construction and design of the modern car. Tyre decay can certainly be retarded by many devices which are alleged to extend the life of this valuable accessory, in the form of protective tyre jackets, and so forth, which are often simple, cheap and easily applied and although the slowing of a car consequent to their use may be considerable, yet the gain in tyre up-keep more than outweighs in the long run. Many think that internal reinforcements do not materially assist in the prevention of external damage, but the beneficial effect is nevertheless apparent when subjected to more than casual consideration. It will be found, however, that in the majority of cases the motorist prefers his car fitted with reliable covers, and most people will freely dispense with devices of various kinds connected therewith, provided satisfactory results are obtainable without such aid, and that the tyre bill is kept within reasonable limits.

"SHELL"
MOTOR SPIRIT

A POPULAR PETROL AT A POPULAR PRICE.

The African Life Assurance Society,

LIMITED.

DIRECTORS' REPORT

For the period ending 31st December, 1911, presented to the SEVENTH ANNUAL GENERAL MEETING held on the 21st February, 1912.

THE Directors have the great satisfaction to report that during the period ended 31st December, 1911, there were received :—

4,333 Applications to Assure	£1,691,075
Of these 1,078 were declined, postponed or not proceeded with, amounting to	£435,225
Leaving 3,258 completed, and policies issued for ...	£1,255,850

INCOME,

The Annual Income arising from policies issued during the year amounts to £48,937 12s. 2d.

CLAIMS.

The Claims, less re-assurances arising within the year amounted to £9,331.

ACCOUNTS.

The Income and Expenditure and the Assets and Liabilities are given in the Revenue Account and Balance Sheet, in the form required by the Life Assurance Act. The Report of the Auditors on their examinations of the Books and Accounts of the Society is appended to the Balance Sheet.

RETIRING DIRECTORS AND AUDITORS.

The retiring Directors are Messrs. Emrys Evans and W. O. Bullock, both of whom offer themselves for re-election.

The retiring Auditors, Messrs Alexander Aiken & Carter, offer themselves for re-election.

PROGRESS OF THE SOCIETY

Funds at the end of the first year, 1905 ...	£26,483	19	11
,, ,, ,, second year, 1906 ...	£42,465	13	1
,, ,, ,, third year, 1907 ...	£58,467	19	6
,, ,, ,, fourth year, 1908 ...	£77,104	12	0
,, ,, , fifth year, 1909 ...	£97,793	18	8
,, ,, ,, sixth year, 1910 ...	£120,017	8	0

Funds at the end of the Seventh year, 1911 - £156,769 19 9

The Directors congratulate the Members on the continued progress of the Society.

RICHARD BAUMANN,
FRANCIS NAPIER,
KENDAL FRANKS,
EMRYS EVANS,
I. F. ATTERBURY,
W. OTIS BULLOCK,
} Directors.

I. W. SCHLESINGER. Managing Director.

JOHANNESBURG,
20th January, 1912

25067

Witwatersrand Deep, Limited.

(INCORPORATED IN THE TRANSVAAL.)

Amended Notice to Shareholders.

NOTICE IS HEREBY GIVEN that an EXTRAORDINARY GENERAL MEETING of the Shareholders in the WITWATERSRAND DEEP, LIMITED, will be held in the Company's Board Room, Cullinan Building, Johannesburg, on THURSDAY, the 25th day of April, 1912, at 2.30 o'clock in the afternoon, for the purpose of considering the advisability, and if thought fit, passing the following resolution, namely :—

"That the Articles of Association of the Company be and they hereby are altered and amended :—

(a) by deleting in Article 53 the words "the first quarter of every year," and substituting therefor the words "every year in the fifth month after the close of the Company's Financial Year,"

(b) by deleting in Article 128 the word "three" and substituting therefor the word "five."

AND NOTICE IS HEREBY FURTHER GIVEN that a Confirmatory Meeting of the Shareholders in the said Company will be held on the 17th day of May, 1912, at 2.30 o'clock in the afternon at the same place for the purpose of receiving a report of the proceedings at the abovementioned Extraordinary General Meeting, and for the purpose of confirming the aforementioned resolution as a Special Resolution.

The London Transfer Registers of the Company will be closed from the 27th March to the 7th April, 1912, both days inclusive, and the Head Office Transfer Registers of the Company will be closed from the 22nd to the 25th of April, 1912, both days inclusive

Holders of Share Warrants to Bearer desiring to vote must deposit their Share Warrants at the Head Office of the Company, Johannesburg, at least twenty-four hours before such Extraordinary General Meeting, or at the London Office, Salisbury House, London Wall, E.C., on or before the 26th of March, 1912, together with a statement in writing of the name and address of the holder of the Warrants, in Exchange for which a Certificate will be given entitling the holder to attend and vote at the meeting in respect of the shares specified in such Certificate.

By Order of the Board,

H. G. L. PANCHAUD, Secretary.

Head Office, Johannesburg,
23rd February, 1912.

South African Gold Mines, Limited.

(INCORPORATED IN THE TRANSVAAL.)

Notice to Shareholders

NOTICE IS HEREBY GIVEN that the NINTH ORDINARY GENERAL MEETING OF SHAREHOLDERS in the South African Gold Mines, Ltd., will be held in the Board Room the Jeppe Arcade, Commissioner Street, Johannesburg, on WEDNESDAY, the 27th of MARCH, 1912, at 10.45 a.m., for the following business :—

(1) To receive and consider the Directors' and Auditors' Reports, the Balance Sheet, and Profit and Loss Account for the year ended the 31st of December, 1911.

(2) To elect Directors in the place of the present Board, consisting of Sir Abe Bailey, K.C.M.G., Colonel Sir Aubrey Woolls-Sampson, K.C.B., M.L.A., and Messrs. Julius Jeppe and J. H. Ryan, all of whom retire in accordance with the Articles of Association, but are eligible, and offer themselves, for re-election.

(3) To appoint Auditors for the ensuing year, and to fix remuneration for the last audit.

(4) To transact General Business.

The Share Transfer Books of the Company will be closed from the 18th to 27th March, 1912, both dates inclusive.

By Order of the Board of Directors,

O. F. BROTHERTON, Secretary,

(For the Witwatersrand Township, Estate and Finance Corporation Limited.)

Head Office : The Jeppe Arcade, Johannesburg,
20th January, 1912.

THE SOUTH AFRICAN
Mining Journal,
WITH WHICH IS INCORPORATED
The South African Mines, Commerce and Industries.
ESTABLISHED 1891.

VOL. IX., PART II.] MARCH 2, 1912. [No. 469.

HEAD OFFICE: 119-126 Exploration Building (3rd Floor).
Telephone **913.** P.O. Boxes **963** and **418.**
Cable and Telegraphic Address: "**MINING JOURNAL.**"

LONDON EDITOR AND MANAGER FOR GREAT BRITAIN: Percy Snowden, 125 Salisbury House, London Wall, E.C., to whom all communications must be addressed.
GERMAN AGENTS: Arthur Dean, Schellingstr 1, Berlin, W., 9; Rudolf Mosse, Jerusalemer Strasse, 46-49 Berlin, S.W. 19; H. C. Wolff, Residenzplatz, M. 85, Kempten, Bavaria.
AMERICAN AGENTS: Gotham Advertising Company, 95 Liberty Street, New York.
ANNUAL SUBSCRIPTION RATES: Oversea, £2; South Africa (by post), £1 10s.; Local Delivery (Town only), £1 6s.
Copies of this journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Office as above.

NOTICE.—The postage of this issue of the *S.A. Mining Journal* is: South Africa, 1½d. All other parts, 3d.

CONTENTS.

PAGE
Notes and News ... 925
Topics of the Week:
- The Rehabilitation of the E.R.P.M. ... 927
- The Fiscal Question ... 928
- The Chamber of Mines View ... 928

A Coming Central Rand Amalgamation ... 929
The Randfontein Central—S.R. Deep Merger ... 930
The Year with the New Heriot ... 931
The Position of the City and Suburban ... 932
The Quest of a Suitable S.A. Coke ... 932
The Problem of the Contorted Bed ... 933
Competition in Transvaal Cement Manufacture ... 934
The Outlook for Rand Mining ... 935
Group Results in 1911 and 1910 ... 936
Mines of the Witwatersrand: XI., Princess Estate and G.M. Co., Ltd. ... 937
The E.R.P.M. Meeting ... 940
Official Review of Labour and other Questions ... 941
Union Mineral Output in January ... 942
Trade and Industries Commissions' Report ... 943
Mine Accidents on the Rand ... 944
Progress in Cyanidation of Gold and Silver Ores during 1911.—IV. ... 945
Rhodesian Section:
- Latest Mining News ... 947
- Rhodesia's Mineral Output ... 949

The Goldfields Rhodesian Development Co. ... 951
Correspondence and Discussion: "Cinderella Consolidated and the Eight Hours' Day"; "Do our Auditors shirk their Duties?" ... 953
January Grade, Costs, and Profits ... 954
Mining Men and Matters ... 955
S.A.M.J. Anniversary Number ... 956
The Week in the Sharemarket ... 957
Engineering Notes and News ... 958
Finance, Commerce, and Industries ... 961
Quarterly Reports ... 967
Automobile Notes ... 969
Contracts Open ... 971
Index to Advertisers.

Notes and News.

Randfontein Debentures. AN influentially supported movement is on foot to obtain an extension of the time for exercising the right to convert the 6 per Cent. Debentures of the Randfontein Estates into shares. Holders who are interested are invited to communicate with Messrs. Michael Abraham and Sons and Co., of 5, Tokenhouse Yard, London, E.C., the solicitors acting in the matter. We doubt very much whether Sir Joseph Robinson and other directors will welcome the movement. In any case an extension is not likely to be granted, and it would be unfair to the shareholders if the directors were generous in the matter. The Debentures were issued under certain conditions, which ought not to be departed from. If it were an extension of an option on shares, it would be a totally different matter.

* * * *

The Surface Dust Evil. It is unnecessary for us to remind local readers that, when any sort of a wind is blowing over the Witwatersrand, sand from the tailings dumps detracts greatly from the joys of living. But for those who have never seen a Rand dust storm or a sand storm, we may remark that few things try surface workers on Witwatersrand mines more. Numerous attempts have been made to beautify these unsightly mountains of sand, and to render them less of an eyesore (an eyesore in a double sense, it may be added) to those who labour among them. The packing up of old stopes with sand will tend to minimise their bulk, but even were the rate of sand-filling quadrupled, they would still be troublesome and unsightly. It is, therefore, of interest to note that at the Princess Estate the very simple yet excellent method of dumping waste rock on the sands heap is being practised with some success. The weight and area of the discarded rocks tend to minimise the distressing amount of dust blown about on a windy day. Of course, such a method can only be practised on a property where a considerable amount of waste rock is rejected. However, the idea seems to us to be worthy of some consideration on other Main Reef properties.

* * * *

South African Gold Trust. The report of the Gold Trust for the year ended December 31, 1911, shows that the realised net profit amounted to £216,099, against £225,811 for the previous year; but the directors have found it necessary to write off £108,122 from the profits of the year against depreciation in investments, and after deducting the preference dividend and the interim dividend of 1s. 6d. already paid, the amount now remaining for distribution is £38,925, plus the sum of £99,879 brought forward from last year, or £138,804 in all. Out of this amount the directors recommend a final dividend of 2s. per share, making 3s. 6d. for the year, which will absorb £50,000 and leave £88,804 to carry forward. In accordance with their custom the directors present the figures without comment, beyond drawing attention to the fact that, in addition to the amount taken from profits, a further sum of £65,000 has been written off from the reserve on account of depreciation, and that a change has been made in the presentation of the accounts. The company this year issues a schedule of its principal holdings, the last having appeared in the report for 1908. As compared with the previous schedule, the most important change is the increase in investments outside Africa, which now represent about one-third of the total. The balance sheet for that year showed at December 31, 1908, after deducting liabilities, assets of £1,444,301, against capital £1,000,000; but since that time the company has paid out dividends in cash amounting to 30 per cent. on the preference and 77½ per cent. on the ordinary, or £537,500 in all.

Consolidated Gold Fields Dividend.

The report of the Gold Trust for the year ended December the directors have found it necessary to make a large provision against depreciation of assets, gave rise to some fears lest there should be no interim dividend this year on Gold Fields. These have now been disposed of by the declaration of 1s. 6d. per share, or 7½ per cent. Last year 2s. was paid. The present distribution involves the payment of £150,000. The contrast of declarations is set out as follows:—Interim, 1911-12, 7½; 1910-11, 10; 1909-10, 10; 1908-09, 10. Final (and bonus), 1911-12, nil; 1910-11, 20; 1909-10, 25; 1908-09, 25. The extremes of price of the ordinary shares in the period have been 7 5-32 August, 1909, and 3¾ late in 1911.

* * * *

Mining in the East Africa Protectorate.

According to the official report on the East Africa Protectorate, just published, thirteen prospecting licences have been issued during the year, but no very important or commercially valuable discoveries have been made. The most important event of the year has been the discovery of coal near Mackinnon Road Station. The area was roughly inspected by the Commissioner of Mines, and the samples found were reported as real coal, but the outcrop was not determined. Further investigations are to be made, and the surrounding district is to be exploited by a geological expert. Arrangements have been made for the construction of the Magadi Railway, and it is anticipated that the soda obtained from the lake will eventually prove a source of considerable revenue to the Protectorate. Several samples of minerals received from prospectors have been tested, but up to the present nothing of commercial value has been declared. An application for a concession to work certain mineral water springs in the Nandi Native Reserve was refused in view of strong local objections, as the springs have for years past been used by the natives as salt licks for their cattle. Samples of diatomite deposit discovered in the Rift Valley, in the Naivasha Province, were forwarded to the Imperial Institute for examination, and a favourable report was received, but at present the steamer freight is a great impediment and does not admit of the profitable working of the deposit. Mica is found near Machakos, and a German firm has applied for areas, but no work has yet been commenced. An interesting discovery of fossils was made by Mr. Chesnaye in 1910 on the eastern side of Lake Victoria. These fossils include part of a jaw with teeth of a small extinct proboscidean of the genus "Dinotherium," portions of a small rhinoceros, and fragments of the shell of a giant tortoise. The great interest of the discovery is that hitherto no remains of Tertiary mammals have been known from Central Africa, although a considerable number of different species have been described from both the northern and southern portions of the continent. It seems probable that, when these new fossiliferous beds have been explored by trained investigators, very rich discoveries will be made of great importance in tracing the origin of modern mammals.

* * * *

New Steel Works.

In some notes on the steel industry by Mr. G. Halford Smith, which appeared in our last issue, at the bottom of the first page appears an error, which requires correction. Mr. Smith wrote that the successful tenderer was "endeavouring to raise the necessary Capital *for his Company*." This was printed thus: "Who is endeavouring to raise the necessary capital *in Germany*." It is satisfactory to know that the whole of the necessary capital has been subscribed in England and South Africa, and the misprint in question need not, therefore, alarm those who feared Germany was about to capture another of our industries.

German South-West Africa.

Dr. Solf, the German Colonial Secretary, is to visit German South-west Africa, as he "wishes to become acquainted with its manifold problems on the spot." A subject which is certain to engage Dr. Solf's attention is the system of taxing the produce of the diamond mines. At present an extremely heavy export duty is levied on the gross produce—one mine, which sold £142,000 worth of diamonds last year, paid over £62,000 to the German Government in duty alone—the result being that within the last twelve months all the mines, with the exception of three or four of the richest propositions, have been compelled to close down. It is stated in the latest report of one of the companies that "the authorities are likely to accept the principle of altering the present export duty into a tax on net profits."

* * * *

Coal Shafts and Gold Shafts.

At a recent meeting of the Institute of Mining and Metallurgy in London, considerable discussion ensued on a paper by Mr. H. M. Morgans, entitled "Notes on the Operations of Two Winding Engines." Mr. E. Hooper, in commenting on the paper, spoke of a particular winding engine at work at one of the large mines in Kalgoorlie, and stated that he had been rather surprised to find how large a percentage of time it was idle. Mr. Hooper advocated the use of tacographs, and said he had been at some pains to obtain exact records of the work of winding engines in other parts of the world, but without success so far as productive time was concerned. The question was one of importance as affecting the design and cost of engines to hoist a definite amount of ore within a given time. Mr. H. F. Marriott thought he could give a pointer to Mr. Hooper as to the difficulty of answering the question about shaft efficiency. He had had occasion to compare the work done in hoisting through a combined vertical and inclined shaft on a gold mine, where different levels were hoisted from in the usual day's operations, with that of a colliery in South Wales, at which an eight hours' shift was devoted to hoisting coal at the maximum capacity of the installation. The difference in efficiency was that the colliery, on an equal basis of equipment, hoisted ten times as much as the gold mine. That would demonstrate the wide margin to be encountered in investigating comparative efficiencies. Mr. Marriott's statement is of very great local interest, more especially so in view of the fact that of late years a distinct tendency to adopt certain methods of modern colliery practice has been observable on the Rand.

* * * *

Premier Diamonds.

An erroneous impression has been read into the concluding paragraph of an article on Premier Diamonds in the last issue of the *South African Mining Journal*. The paragraph made reference to Sir David Harris, and we may state now that Sir David has no interest whatsoever in the recent purchases of Premier shares by the firm of Barnato Brothers, nor has he joined the Government benches, though he has on occasions voted with the majority when, no doubt, his judgment directed his to do so.

* * * *

Zaaiplaats.

We wish to take the earliest opportunity of correcting several obvious printer's errors which appeared in our article on "Zaaiplaats and Rooiberg Prospects" in our issue of the 24th February, and which were overlooked in the hurry of going to press. It was made to appear that the Zaaiplaats Tin Mining Company, Ltd., "paid dividends amounting to 20 per cent. for the year ended December 31st, 1912." This should have been, of course, "paid dividends amounting to 210 per cent. for the year ended December 31st, 1911." The intelligent reader will have perceived the nature of the error on reading further on that "for the year 1911 dividends amounting to 10s. 6d. per 5s. share were paid, as already mentioned." This is equivalent to practically

20 per cent., and not 10 per cent. as was printed, on the price quoted. These printer's errors were, fortunately, sufficiently inconsistent with the remainder of the article to carry their own correction.

* * * *

Manicaland Mining.

During the past week we have had the pleasure of a chat with Mr. Austin King, Director of Mines in the territory of the Mozambique Co. The modifications of the mining regulations in the territory are now published in English in handbook form, complete with article and alphabetical indexes. At the end of the regulations all the forms in use by the public are appended. The principle modification in this new edition consists in the facilities offered to small men. The new regulations are as follows:—" The holder of claims that are being worked for profit or the person with whom a contract of option or lease has been entered into for the working of claims or of the products of claims for profit shall pay to the Companhia de Mocambique a percentage of the production or of the nett profits of the working, calculated as follows: (1) In the case of gold and secondary products of gold including silver: (a) If the gross monthly production does not exceed 800 ounces of fine gold, the percentage to be paid shall be based upon such gross production and shall be the following: When the monthly production does not exceed 200 ounces of fine gold, 1 per cent. When the monthly production exceeds 200 ounces, but does not exceed 400 ounces, 2 per cent. When the monthly production exceeds 400 ounces, but does not exceed 600 ounces, 3 per cent. When the monthly production exceeds 600 ounces, but does not exceed 800 ounces, 4 per cent. (b) If the gross monthly production exceeds 800 ounces of fine gold, the percentage to be paid shall be 10 per cent. Of the nett profits which result from the working the sums destined for the payment of interest on bonds, are also considered as profits for the purposes of these taxes." The first six monthly trip of the geological survey, which is surveying the territory of the Mozambique Co. in sections was completed towards the end of last November. The portion of country examined was a strip extending from the Savi along the Rhodesian frontier over an approximate breadth of 40 miles up to the Lusite River, which forms the boundary between the districts of Mossurize and Moribane. The two geologists returned to London to complete the mapping of the work done, under the superintendence of Prof. Wyndham Dunstan, F.R.S. The weather conditions during the six months' were favourable, and the survey party obtained much valuable information regarding that portion of the territory examined. It is probable that in the coming dry season the tract of territory lying along the Rhodesian frontier, between the Lusite River and the railway near Macequece will be completed, thus continuing to follow southward the line of mineralised regions along the frontier. A great deal of work is being done by the Andrava Mines, Ltd., in prospecting the alluvials of the Revue valley in the neighbourhood of Macequece. The object is to prove the payability of the ground, before attempting any active gold winning operations. So far the results are understood to be thought satisfactory. In the coming year, it is proposed to put down many more shafts, as, should the prospecting be satisfactory, it is intended to work the alluvial on a very large scale. The company is prepared to spend a considerable sum of money to test the proposition. Regarding the Edmundian Mine in the same territory, it is hoped before long the development work will be resumed.

TOPICS OF THE WEEK.

THE REHABILITATION OF THE E.R.P.M.

It was a very chastened, but none the less courageous, Sir George Farrar that stood up once again to face the E.R.P.M. shareholders last Wednesday morning. Candour equally with courage was the keynote of his whole speech, and the combined qualities so disarmed the critics that some who had come to scoff remained to praise. For instance, Sir George cut the ground from under the feet of those who considered that Mr. Ross Skinner's ore reserve estimates would put the Chairman in a tight corner. Nothing of the sort, however, happened, as Sir George was able to show that Mr. Ross Skinner's estimates were quite consistent with those given at the London meeting, the changes necessitated by the altered working cost estimates having been made. Again, Sir George frankly admitted that the working cost estimates for the past year could not be accepted in view of the revelations contained in Mr. Ross Skinner's report. He was able to disclaim any knowledge of or responsibility for the " panic methods " of mining that Mr. Ross Skinner had unearthed, and he practically confessed that he had been, in company with his fellow directors, stupid and foolish, but entirely innocent of any complicity in the series of deceptions, the recital of which makes Mr. Ross Skinner's report such serious and painful reading. Naturally, in view of this declaration, and the clear and exhaustive account of the affairs of the Company which Sir George was able to give, the opposition at the meeting, after some remarks by Messrs. W. Pott, Fraser Watson, Waldie Pierson and J. E. Jones, dwindled to insignificance and what little spirit it showed resolved itself into barren and fatuous personalities that failed to edify or convince. For Sir George, indeed, the meeting was almost a personal triumph. His quarrel—if so it could be termed—with the Central Mining people has been made up, and Mr. R. W. Schumacher was there to testify by his speech and presence to the reality of the big co-operative effort that is to be made to rehabilitate the East Rand Proprietary. Sir George is to remain as chairman of the company and of the Finance and Mine Committee of the Board. His retirement from public life is to be complete, and he is to concentrate on the great work of reform, which, " given peace," he, better than anyone else is qualified to carry out successfully. Mr. Wallers will be his vice-chairman, and his appointment is an earnest of the whole-hearted support of the Central Mining Corporation in seconding Sir George's efforts. It is unnecessary to attempt to retrace here the ground traversed by the Chairman in reviewing the position. Elsewhere we print a summary of the points in his lengthy speech, and it will be seen that, with the greater wisdom that has come to him out of sorrow, he is more reluctant than ever to assume the role of a prophet. His expressed determination to put things right, however, will suffice to reassure most shareholders, who cannot overlook the fact that the combative energy and indomitable perseverance of their chairman is not the least of the many great assets remaining to the company. And so opens the new chapter in the history of the East Rand. The worst is known about the property, or rather the truth is known as seen through the disillusioned and sceptical eye and related in the cautious and canny phrases of " one of the most honest engineers on the Rand." Recriminations may well now cease, and shareholders may rest content in the knowledge that the best brains, the highest endeavours, and the genuine goodwill of the whole industry are at work to restore their property to its former value and importance.

THE FISCAL QUESTION.

The inevitable has happened, and the majority report of the Commerce and Industries Commission, issued this week, plumps for increased protection and its corollary, higher cost of living all round. That the majority of the Commission would be in favour of a protective tariff was, of course, only to be expected in view of the *personnel* of that body, but few anticipated such a thumping increase of taxation as the report, throwing moderation to the winds, now recommends. Fortunately, the minority, Mr. W. A. Martin, the late President of the Johannesburg Chamber of Commerce, and Mr. W. MacIntosh of Port Elizabeth, have issued valuable individual reports that afford an effective counterblast to the short-sighted proposals of their colleagues. The majority hold that it is in the best interests of the country as a whole that adequate protection should be given to agriculture and industrial undertakings, adding that they found their recommendations on economic and national grounds. The report states that the Commission has only taken into account three factors which it considers essential before any industry can be recommended for favourable consideration: (1) That a fair proportion of raw material used is, or can be, obtained in the country; (2) that a fair percentage of white labour is employed; and (3) that there is a reasonable chance of the industry becoming established. For example, it is proposed to increase the duty on boots and shoes from 15 to 25 per cent., to impose a like duty on leather goods, to increase the duty on furniture to 20 per cent., to make ready-made clothing pay 15 per cent., and suits made to order outside the Union 25 per cent., and to grant South African china and pottery ware the benefit of a protective tariff of 30 per cent. Apart, therefore, from the few pious aspirations for the development of local industries, it will be seen that the majority report is frankly high protectionist, and inimical to the best interests of every industry in the country, except those of the handful of manufacturers directly favoured by it.

The duty of inland consumers, workers, and the mining industry towards the new tariff proposals is patent. There must be organised opposition to proposals that cynically aim to exploit the wage-earner and the inland dweller for the benefit of manufacturers who are under no obligation to buy their labour otherwise than in the cheapest, *i.e.*, the native, market. Indeed, it is pitiable to note how the majority report signally fails to return any satisfactory answer to the question presented to it in regard to encouraging white labour. More technical education, the report tells us, is all that can be suggested to advance the cause of the white worker, a recommendation which may be accepted as a counsel of perfection, and of which we needed no commission to remind us. The whole treatment of the colour question, in its relation to industries, appears to have been shirked in the majority report. Even the long suffering consumer on the Rand might become reconciled to be bled, if he believed that his sacrifice was made in the interests of local industries that employed white labour. But under the present protective tariff, and still more under the proposed additions, he is taxed simply to increase the wages of, and competition for, the lordly Kaffir. For protection, it is plain, does not, and cannot, discriminate. A bounty system, on the other hand, can be designed to encourage the employment of white labour, and to discourage that of black. But, for some reason, which the report does not attempt to specify, the bounty system is not favoured, and the majority of the Commission have nothing to offer us but the crudest and most unscientific form of high protection. On the general proposition that industries must be started and fostered everybody, of course, is agreed, and no criticism of the rule of thumb nostrums of the majority report must be read as inimical to the industrial development of the country.

Where the majority fails, plainly, is in a lack of appreciation and understanding of our staple industries, mining and agriculture—particularly mining. At no time in the history of the latter industry was it plainer that its life is only bounded by the ability profitably to mine the enormous bodies of low grade ore on the Rand. Of this the millions of tons of ore in the East Rand Proprietary Mines on the margin of payability—discussed in another part of this issue—furnish a striking and opportune example. Yet in the face of this we have the Commission calmly contemplating increasing the cost of living to an extent that involves the inevitable limitation of profitable mining, in the hope and doubtful expectancy of thereby stimulating certain nebulous forms of local manufacturing activity. In fine, it is prepared to forego the bird in the hand for the elusive bird in the bush. The proposals, indeed, would be preposterous were they not put forward in good faith and with such a show of deliberation. Fortunately, the Government has made known its decision not to tamper with the tariff during this session. It has learned during the past few days from the debate on the railway taxation iniquity, initiated by Sir Lionel Phillips, that the inland consumer is not going to submit indefinitely to be taxed through the railways to pay for "political lines" at the Coast, and to make up the deficits of the whole Union. We hope that the immediate effect of Sir Lionel Phillip's *exposé*, following on the cold-blooded proposals of the Cullinan Report to send up the cost of living, will cause all inland consumers to league together, even at this late hour, in defence of their common rights and interests.

THE CHAMBER OF MINES' VIEW.

Mr. H. O'Kelly Webber has rendered a signal service to mining and the country by his statesmanlike review of the present *malaise* of the industry and of the things it must do to be saved. His address at the annual meeting of the Chamber of Mines on Thursday—of which we print portions elsewhere in this issue—was all that such a pronouncement should be, and much more. Excellent, for instance, was his detailed recital of the success that had attended the multitudinous activities of the Chamber during the past year. Nor could his detailed review of the gold, diamond, coal, and base metal production be improved upon. Nevertheless in neither of these lay the chief merit of his speech. Where he scored was in his clear and convincing demonstration of the enormous possibilities of the low grade ore reserves of the Rand and of the primary duty of the Government, controlling houses, and all concerned, to co-operate, in the interests of the country, to render those reserves capable of profitable exploitation. The subject is obviously of vital importance, and it is one which the retiring President of the Chamber has very near his heart. When the Union legislators visited the Rand last year, he left them under no illusions regarding the direct dependence of the life of the industry on this ability to extract at a profit the low grade ore of the Rand, and it was sound judgment to hammer in the same vital fact on Thursday, in order that it may not fail to reach, educate, and impress the larger audience scattered through South Africa. The leaders of the industry, we are glad to learn from Mr. Webber, are now fully alive to their duty in the matter. "A new spirit of co-operation has dawned in every department," declared Mr. Webber, and none will begrudge it a hearty welcome, trusting that it will evidence itself with promptitude in remedying the deplorable plight into which competition has plunged native labour recruiting. A herculean effort is to be made to replace native labour by mechanical appliances; and once again it appears that the industry is about to start in to reform itself. Unfortunately all its efforts must go for nothing unless it can succeed in enlisting the sympathy and support of the Government in the struggle to ensure its maximum career of production and of usefulness to the country. If anything could do so, Mr. Webber's simple, direct, and carefully worded appeal ought to awaken that sympathy and support. The fewer the imposts, the lighter the taxation, direct and indirect, placed upon mining, the longer will it continue to nourish and enrich every branch of South African industrial activity. Self evident though the proposition be, it is so often ignored by our pseudo-statesmen and legislators that one begins to despair of its acceptance before it is too late. Mr. Webber, at any rate, has profited by his high official position and unique grip of the facts to deprive the Government of any excuse whatever for continuing to misunderstand the matter.

A COMING CENTRAL RAND AMALGAMATION.

A Ferreira and Ferreira Deep Fusion under Consideration—Details Not Likely to be Announced for Some Months.

THE latest amalgamation to come on the *tapis* is that of the Ferreira and Ferreira Deep. The Ferreira is, of course, now "nearing its end." In the directors' report for the three months ended December 31st last, it is shown that less ore was crushed in 1911 than during 1910, a result which Mr. H. A. Rogers prepared the shareholders for, when he said: "The crushing capacity of the mill is, of course, now dependent upon the quantity of rock which can be obtained from the mine, and as month by month it becomes more difficult to obtain supplies, so it must be expected that the tonnage crushed will vary to some extent." During last year, 310,300 tons were sent to the mill, compared with 346,150 tons in 1910, the net profit for the twelve months being £202,780, as compared with £308,708. The company distributed in dividends last year £190,000. Mr. Rogers, at the annual meeting, stated: "It is difficult at this stage of the life of the mine to estimate with accuracy either the further period for which milling operations will be carried on or the profits which may be expected therefrom." The December report shows that the reserves of developed ore are becoming exhausted, and it is explained that most of the rock required for the mill is now obtained from old workings, reef packs, and isolated pillars. It is difficult to estimate the quantity and value of rock from these sources, but it is hoped that about 60 stamps will be kept running during the early part of the current year, crushing approximately 16,000 tons per month. While a considerable decrease in profits is thus to be expected, every endeavour will be made to keep expenditure as low as possible.

FERREIRA DEEP.

The Ferreira Deep, despite some temporary troubles, is of course in a very sound position. In the course of his last annual report, the consulting engineer, Mr. P. Cazalet wrote: "The pronounced shortage of native labour has had a serious effect towards restricting profits by both reducing the tonnage available for crushing and directly increasing the costs by necessitating the employment of inefficient substitutes. The development accomplished during the year proved, for the most part, reefs of good value. Both reefs have exposed very good values indeed in the neighbourhood of No. 2 Shaft and between it and the western boundary; but in the neighbourhood of No. 1 Shaft the reefs are proving much lower in grade, but latterly, as the drives are extending eastwards, values are tending to again improve. The payable ore reserves standing developed in the mine at September 30th, 1911, are estimated to be as follows:—Leader (including some main reef), 936.554 tons, value 10.2 dwts., of an estimated stoping width of 69 inches: south reef, 901,254 tons, values 9.1 dwts., of an estimated stoping width of 58 inches; total 1,837,808 tons, value 9.7 dwts. Compared with the previous year, there is an increase in the payable ore reserves of 58,480 tons, while the value also shows an increase of .1 dwts. Of the above 1,837,808 tons of payable ore standing developed, 358,491 tons, valued at 8.9 dwts., consisting of shaft and boundary pillars, although fully developed, are not presently available for stoping, while a further 63,899 tons, with a value of 12.4 dwts., are also temporarily unavailable, whilst sands-filling operations in their neighbourhood are being carried on. The unpayable ore standing exposed in the mine has further increased to 259,508 tons, valued at 2.7 dwts., representing 4.3 per cent. of the total tonnage mined and developed by your company to date. The underground conditions have still further improved latterly, and there appears no reason why increased profits should not be shown as soon as the bulk of the sands-filling now in hand is completed." We refrain from making any guesses at the basis of amalgamation, as no doubt that question is still *sub judice*, and will be submitted to shareholders as soon as some provisional agreement is arrived at.

New Modderfontein.

The directors' quarterly report for the three months ended the 31st of December, 1911, states:—

Mine.—Development work—The circular shaft was deepened a further 351 feet during the quarter, making its total depth 1,021 feet from the surface. Number of feet driven, sunk and risen, exclusive of stopes, 6,548 feet. The reef disclosures were as follows: Main Reef, distance exposed, 4,097 feet, width 10 inches, assay value 43.5 dwts. Stoping—Tonnage stoped, including ore obtained from developing faces, 176.189 tons. Ore Treatment.—The following were the results obtained from the reduction operations: Milling—Percentage of waste sorted out, 12.1 per cent.; number of stamps in operation, 180; average running time, 84 days; ore milled, 156,200 tons; milling duty per stamp per 24 hours, 10.3 tons.; yield. 41,991 ozs. fine; yield per ton milled, 5.38 dwts. fine. Cyaniding—Tons treated, 155,496 tons; yield, 14,888 ozs. fine; yield per ton treated, 1.91 dwts. fine. Summary of Ore Treatment (on basis of tonnage milled)—Milling, total yield, 41,991 ozs. fine, 5.38 dwts. fine per ton; cyaniding, total yield, 14,888 ozs. fine, 1.90 dwts. fine per ton; total yield, 56,879 ozs. fine, 7.28 dwts. fine per ton. Working Expenditure and Revenue.—Mining expenses—Mining, £83,086 5s. 7d.; development redemption. £11,331 10s. 2d.; £94,417 15s. 9d., cost per ton milled, 12s. 1d.; reduction expenses, £29.819 8s. 3d., cost per ton milled, 3s. 10d.; general expenses—mine, £7,741 6s. 1d., cost per ton milled, 1s.; head office, £3,878 0s. 5d., cost per ton milled, 6d.; £135,856 10s. 6d., cost per ton milled, 17s. 5d.; working profit, £102,837 4s. 3d., cost per ton milled, 13s. 2d.: a total cost of £238,693 14s. 9d., cost per ton milled, £1 10s. 7d. Net profit, £106,798 0s. 4d. Revenue, £106,798 0s. 4d. The 10 per cent. tax on profits due to the Government for the quarter is estimated to amount to £10,660. Reserve gold.—At the 31st December, 1911, the company had 10,628 ozs. of fine gold in reserve. The capital expenditure for the quarter has amounted to £35,558 11s. 11d., exclusive of the proportion of an annuity of £17,310 payable to the Government in respect of mining rights acquired under an area of 4.9715 claims. An interim dividend (No. 11) of 12½ per cent. was declared on the 15th of December, 1911, for the half-year ended the 31st of December, 1911, and will be payable on or about the 5th of February, 1912, from the head and London offices to shareholders registered on the company's books at the 31st December, 1911. Holders of share warrants to bearer will receive payment of Coupon No. 11 attached thereto, on presentation at the London office.

Simmer and Jack.

The directors' report for the quarter ended December 31, 1911, states: Mine.—Number of feet driven, sunk and risen, 1,204½ feet; ore crushed, 204,900 tons; less developed, estimated at about 144,997 tons—(This quarterly estimate of tonnage should not be expected to include all ore fully or partially developed during the period, as blocks of ground may be held over pending fuller information)—excess crushed during period, 59,903 tons. Mill.—During October, 1911, an average of 320 stamps ran 29 days 19 hours 1 min., during November an average of 320 stamps ran 29 days 9 hours 10 mins., during December, an average of 320 stamps ran 29 days 15 hours 17 mins.; total running time, 88 days 19 hours 28 mins. Mill and Tube Mills.—Tons crushed, 204,900; tons crushed per stamp per 24 hours, average, 7.210 tons; yield in fine gold, 30.011.520 ozs.; yield per ton crushed in fine gold, 2.929 dwts. Sands Works.—Sands treated (equal to 53.548 per cent. of tonnage milled), 109,720 tons; yield in fine gold, 20,827.299 ozs.; yield per ton treated in fine gold, 3.796 dwts.; yield per ton crushed in fine gold, 2.033 dwts. Slimes Works.—Slimes treated (equal to 46.452 per cent. of tonnage milled), 95,180 tons; yield in fine gold, 9,781.354 ozs.; yield per ton treated in fine gold, 2.055 dwts.; yield per ton crushed in fine gold, 0.955 dwts. Total Yield.—Total yield in fine gold from all sources, 60,620.173 ozs.; total yield in fine gold per ton crushed, 5.917 dwts. (Note.—Included in yield from slimes are 379.950 ozs. of fine gold, from 6,000 tons of accumulations treated.) Working Expenditure and Revenue.—Working costs, £125,583 1s. 7d. (12s. 3.096d. per ton); profit on working carried down, £129.565 4s. 7d. (12s. 7.760d. per ton); revenue, £255,148 6s. 2d. (£1 4s. 10.856d. per ton); appropriation for additions and renewals fund, £5,625; amount appropriated for shaft sinking, £289 11s. 10d.; profits tax (estimated). £12,000; balance (estimated net profit). £118,711 4s. 5d.;—total, £136,625 16s. 3d. The amount spent during the quarter, chargeable to additions and renewals fund, was: On additions, £2,084 19s. 1d.; on renewals, £385 15s. 8d.; total, £2,470 14s. 9d. At December 31, 1911, there was 1,255 ozs. gold in reserve.

THE RANDFONTEIN CENTRAL–S.R. DEEP MERGER.

Details of the Latest West Rand Absorption—S.R.D. Funds Exhausted in Fruitless Development of Upper Levels—What the Randfontein Central Propose to do.

The Randfontein Central is about to absorb the S.R. Deep of chequered history. The secretary of the South Randfontein Deep, Ltd., informs us that an offer has been received from the Randfontein Central Gold Mining Company, Ltd., to purchase the company's assets, exclusive of cash and stores on hand, shares held by the company in other concerns, and any debts owing to or by the company. The consideration offered for such acquisition of assets is seventy-five thousand (75,000) fully paid £1 shares in that company ranking *pari passu* with the existing issue. This offer has been accepted by the board of directors, subject to confirmation thereof by shareholders, and an extraordinary general meeting will shortly be convened for such purpose. It is believed that the assets of the S.R. Deep will, when realised, fully meet all its liabilities, so that the 75,000 Randfontein Central shares will be available for distribution, if that should be the wish of shareholders. Taking the Randfontein Central shares at, say, 27s., the value of S.R. Deep shares would be 4s. 6d. which is very little over the market price. The letter agreeing to terms from the Randfontein Central Company was received on last Friday week and communicated to the Press on the following day. The following are particulars of work done on the S.R. Deep property during the quarter ended 31st December last:—The Main Incline Shaft was sunk 203 feet, making a total depth of 1,175 feet, at which point sinking was stopped. The footage done on cross-cutting and driving was 1,822 feet. The footage sampled on the Randfontein Leader was 385 feet, giving an average assay value of 5 dwts. 4 grs. calculated over 36 inches, and on the West Reef 352 feet, giving an average assay value of 4 dwts. 22 grs. calculated over 36 inches. The buildings, machinery, and plant are in good condition. It is understood that owing to the state of the money market the S.R. Deep people found it difficult to raise the necessary capital to carry on the development of the property. Their funds have become exhausted in the difficult and expensive work of opening up the reefs in the comparatively broken ground in the upper levels of the property. It is likely that the Randfontein Central people will profit by the lessons of recent development in those levels and will concentrate their efforts on opening up the reefs in depth, where it is hoped they are less broken than nearer the surface. It is understood that the joint managers of the Randfontein Central—Messrs. Bacon and Baring Horwood—have reported in favour of the purchase. Nevertheless the S.R. Deep people may be congratulated on the deal.

E.R.P.M.: Power Troubles.

The secretary of the East Rand Proprietary Mines sends the following copy of a cablegram to the company's London office:—"Breakdown 6,000 kilowatt turbine occurred 22nd January. Reserve power insufficient, causing frequent stoppage portions plant. February tonnage will be affected. Expect repairs turbine completed middle of March. Publish."

The Benoni Position.

In their quarterly report, the directors of the Jumpers Company state:—"In view of the financial position of the Benoni Consolidated Gold Mines, Limited, in which your company is so largely interested, it became imperative for your company to join two financial firms in a loan to the Benoni Company of £25,000, which was raised for the purpose of enabling that company to reach the crushing stage and to meet its liabilities on capital account. The loan bears interest at the rate of 6½ per cent. per annum. It was the intention of your board of directors to have issued a circular with this report in regard to the position of the Benoni Consolidated Gold Mines, Limited. Your directors cannot conceal from themselves the fact that the reduction plant has fallen far short of the results which they were led to expect from it. As, however, no final judgment can be formed at this juncture of the complete success or otherwise of the plant as a whole, the board have decided to await the results of the operations for the month of February, 1912, and thereafter to issue to shareholders of this company a resume of the present position of the Benoni Consolidated Gold Mines, Limited."

Congo Diamonds.

The Belgian Congo is assuredly a wonderfully mineralised portion of the globe. Not only copper, but tin and gold have been discovered in this vast territory, and latterly diamonds have been found as well. Pipes of rock, similar to that in which diamonds occur in South Africa, have been found in the Kundulungu plateau (south-eastern part of Belgian Congo), and some thirty-five diamonds have been washed from sands of creeks in that general vicinity. As yet, however, it is believed that no pipes have been found to be diamond bearing. A company (Kundulungu-Lualaba Company) has been formed to prospect these pipes, erecting machinery to wash the ground in considerable quantities. This company, of which the stock is owned by the Katanga Special Committee and the Tanganyika Concessions, Ltd., has a concession of some 12,000 square miles for diamond prospecting. In 1907 prospectors of the Société Internationale Forestière et Minière du Congo (a Belgian-American company in which Thomas F. Ryan and other Americans are interested) found one diamond on the Kasai River at Mai Munene. In the past summer a prospector for the same company picked up, in a couple of weeks, on the Kambambaie river, near its junction with the Kasai, 240 diamonds, weighing in toto about 39 carats, the largest stones being about a carat. Many of these stones are of excellent water-white colour, others are fancy colours, deep yellows, greens, and hyacinth; comparatively few are off-colour stones. The crystallisation is interesting, twins being comparatively common. These stones were washed either from pot-holes in the stream beds or from sands along the shores. Since then ten diamonds have been found at another locality and several at still another. As a result, diamonds have been found in the bed of the Kasai river and in the lower courses of its tributaries for a distance of 75 miles. Search is now being carried on for the rock source. In passing, it may be stated that the Kasai river in this region has locally cut its bed, down through the flat-lying Jura-Triassic sandstone which covers such large areas in Central Africa, into the older folded and metamorphosed rocks of sedimentary and igneous origin which resemble pre-Cambrian rocks in other parts of the world. The sandstone is equivalent to the Stormberg rocks of Kimberley, South Africa, in which the diamond-bearing igneous rocks occur as "pipes," and in this Kasai locality the diamonds may be either associated with similar chimneys or with one of the basic rocks making up the pre-Cambrian-like basement complex.

Miners' Phthisis.

The Royal Commission that has been investigating the subject of miners' phthisis in West Australia, has now published its final report. The main points are the insistence on the use of the term pneumoconiosis, and upon the frequent supervention of tubercular disease, and a recommendation as to regular medical examination of miners with a view to excluding affected men from the mines.

THE YEAR WITH THE NEW HERIOT.

"Acute Scarcity of Labour"—Increased Ore Reserves—Prospects "Very Hopeful"—Promise of Increased Dividend.

The annual ordinary general meeting of shareholders of the New Heriot Gold Mining Co., Ltd., was held at Maritzburg a few days ago. Mr. Hugh Parker (chairman) presided. The report of the directors showed that on December 31, 1911, the liquid assets were £22,755 19s. 6d., and liabilities £39,808 6s. 3d. The capital expenditure for the year amounted to £10,313 9s. 6d., and two half-yearly dividends of 40 per cent. were declared paid. Summary of revenue and expenditure: From mill, 41,296·411 ozs. fine gold, value £173,179, equal to £1 3s. 11·349d. per ton; from cyanide works, 14,916·178 ozs. fine gold, value £62,636, equal to 8s. 7·929d. per ton; from slimes, 3,366·384 ozs. fine gold, value £14,111, equal to 1s. 11·414d. per ton; from accumulated slimes, 3,243.258 ozs. fine gold, value £13,587, equal to 1s. 10·544d. per ton; total, 62,795·231 ozs. fine gold, value £263,513, equal to £1 16s. 5·236d. per ton. Sundry revenue, £1,282, equal to 2.127d. per ton; total, £264,795, equal to £1 16s. 7·363d. per ton. Working costs, £150,715, equal to £1 0s. 10·075d. per ton; profit, £114,080; equal to 15s. 9·288d. per ton. The above summary does not include gold placed to reserve. In the course of a lengthy report, the acting general manager, Mr. C. Robinson, stated that the workings of the mine, above the 8th level, were unsuitable for machine stoping, and a plentiful supply of native labour was necessary for their safe and economical working, as also to continue the work of reclamation in the upper levels.

SCARCITY OF LABOUR.

The scarcity of native labour was acute: the average number in the service of the company during the year being 1,223, as against 1,340 in 1910 (a decrease of 117), all underground boys. In March power was obtained from the Victoria Falls and Transvaal Power Company to run the new underground hoist and the electrical plant that in the past had been run by power generated on the mine. The general development on both the main reef leader and south reef had disclosed values which were highly satisfactory. In addition to the declared profits, reserve gold amounting to 1,127,373 ozs., valued at £4,789, was in hand at the end of the year. The consulting engineer, Mr. W. T. Anderson, reported that the estimate of payable ore reserves as at 31st December, 1911, was as follows:—North reef, 12,708 tons, 9.2 dwts., stoping width, 61 inches; main reef, 96,445 tons, 6.7 dwts., stoping width, 91 inches; main reef leader, 279,607 tons, 9.0 dwts., stoping width, 42 inches; south reef, 180,956 tons, 8.3 dwts., stoping width 44 inches; total, 569,716 tons, 8.4 dwts., stoping width, 48 inches. The tonnage showed a substantial improvement over the figures for the previous year; the value remained the same. In addition to the above tonnage it was estimated that, at the 31st December last, there were developed 186,493 tons, of an average value of 3 dwts., which represent the accumulated unpayable reserves in the mine. The north reef had been carefully prospected, but with no satisfactory result. The amount of payable ore in that reef was not large. A satisfactory feature of the year's working had been the good values obtained in opening out the ground below the 8th level. The underground workings were in good condition, and provided the native labour force was not unduly diminished, indications pointed to an improvement in the coming year on the results obtained for 1911.

THE MEETING.

In moving the adoption of the directors' report, the Chairman said that the profits of the year amounted to £114,080 4s. 9d., an increase of £6,576 over last year's output, and enabled them to declare two dividends of 40 per cent. each, payable to shareholders registered on 31st May and 30th November respectively, amounting in all to £92,000. A balance of £636 14s., a tax on profits for 1910, has been paid, and an estimated tax of £9,366 for 1911 has been provided for, and an additional sum has been carried forward. The monthly profits, which were £9,016 in January, were maintained at that figure till August, when they were increased to over £10,000, and maintained at that figure till the end of the year. About £9,000 on capital account was spent in completing work started in 1910, and the only additional capital expenditure was for pumping installation. Ore Reserves:—The ore reserves were estimated this year at 569,716 tons, as compared with last year at 485,585 tons, an increase of 84.131 tons. There was a very large number of working faces in the mine, which would enable them to take full advantage of any extra supply of natives, but, like nearly all other mines, they had suffered during the year from a shortage of native labour, and, as all the upper levels were unsuitable for machine drills, it was essential that special efforts should be made to secure a further supply. There was a prospect of this being arranged in the near future, and already since the end of the year a further supply had been secured. It would be seen from the manager's report that the new reef, called the "North Reef," referred to in last year's report, pinched out a short distance below the eighth level, and that the main reef in the western section has proved so far to be unpayable. But the further development of the main reef leader and south reefs had proved that these reefs could be depended upon to give good values. The prospects for 1912 were very hopeful, and last year's dividends would be maintained, if not exceeded. He regretted to report a serious accident in January of this year to the compressor, which necessitated the purchase of a new one. Fortunately, they were able to secure one on the coast, and it was being erected, and will be at work at the end of February. The loss through the stoppages was estimated at £2,000 in January, and £2,000 in February, but, owing to a fresh supply of labour, this loss would be reduced.

The Jumpers.

The operations at the Jumpers property during the quarter ended January 31st resulted in a profit of £4,041. The following is a summary of the joint profit for the quarter:—Profit from mine, £3,550 15s. 8d.; profit from accumulated slimes, £491 2s. 6d.; total profit for quarter, £4,041 18s. 2d.; which has been dealt with as follows:—Handed over to Treasury Gold Mines, Limited, in settlement of their share of profit, £1,509 7s. 1d.; set aside in terms of agreement with Treasury Gold Mines, Ltd. (£400 per month), £1,200; appropriated by Jumpers Company, £1,332 11s. 1d.; total, £4,041 18s. 2d. The profits earned by the company from the beginning of the current financial year, added to the balance of appropriation account carried forward on July 31, 1911, would have allowed of the declaration of a dividend. In view, however, of the financial assistance which it has been deemed necessary to render to the Benoni Consolidated Gold Mines, Limited, the directors, after careful consideration, decided to pass the usual half-yearly dividend.

South Randfontein Deep.

The Secretary of the South Randfontein Deep, Ltd., informs us that an offer has been received from the Randfontein Central Gold Mining Company, Ltd., to purchase the company's assets, exclusive of cash and stores on hand, shares held by the company in other concerns, and any debts owing to or by the company. The consideration offered for such acquisition of assets is seventy-five thousand (75,000) fully paid £1 shares in that company ranking *pari passu* with the existing issue. This offer has been accepted by the board of directors, subject to confirmation thereof by shareholders, and an extraordinary general meeting will shortly be convened for such purpose.

The Minister of Mines has withdrawn from prospecting the farm Scherpdoorn No. 486, District Potchefstroom, Mining District of Klerksdorp, which was thrown open to prospecting under Government Notice No. 19 of 1909.

THE QUEST OF A SUITABLE SOUTH AFRICAN COKE.

Details of a New Coke Venture that Promises to Capture the Union Market.

A FURTHER step in the way of establishing another South African industry has been made by the South African (Vryheid) Coke Company, Limited. This company has evidently, from the analysis of their coal, secured a very exceptional seam for South Africa, which, we understand, is uniform throughout, and have erected a plant which is complete in all its details and quite novel for South Africa, from which they have succeeded in producing a coke of first-class quality, the production of which is calculated to have an important bearing on other local industries, as, owing to the high price of imported coke, a really good coke at a moderate price has been a long-felt want. Coking operations have been commenced with a capacity of 250 tons per month, but provision has been made for this output to be increased to almost any amount as necessity arises. The report on the coke by Mr. F. A. D. H. Moseley, the company's consulting engineer, conclusively proves that it is really a first-class article, and capable of being used with satisfaction in all industrial and metallurgical processes where coke is a necessity. It has a pronounced columnar structure, is lustrous, dense, and very strong. Other features are its freedom from iron stains and the close and even texture of every piece of coke examined, proving it to be produced from a first-class coking coal. The two highest recognised standards of coke are the Durham Foundry, England, and the Connellsville, U.S.A. The analysis of the coke now being produced by the South African (Vryheid) Coke Company, Ltd., proves it is harder and superior in density and strength to the grade of Durham coke imported into South Africa. This opinion is held not only by the company's consulting engineer, but by several prominent engineers to whom Mr. Moseley has submitted samples. In addition to this, it was found that this South African coke contained a lower percentage of ash than that given in the official returns of the Connellsville coke. Such results as these speak eloquently for the locally produced coke, and should at once procure for it a big demand in this country.

THE POSITION OF THE CITY AND SUBURBAN.

Year's Operations Show "Very Considerable Improvement"—Ore from Old Workings—Tube Mills Increase Extraction.

THE annual ordinary general meeting of shareholders in the City and Suburban G.M. and Estate Co., Ltd., was held a few days ago at Maritzburg. Mr. Hugh Parker (chairman), presided.

The Chairman said, inter alia: In moving the adoption of the Directors' report and accounts for the year 1911, I am pleased to report a very considerable improvement in the year's operations. The profit declared for 1909 was £58,305; for 1910 £99,554, and for the year now under review £174,004. This has enabled your directors to declare two dividends—No. 23, 4s. per share, payable to shareholders registered on 30th June, 1911, and No. 24, 5s. per share, payable to shareholders registered on 30th December, 1911. These absorbed the sum of £153,000. The Profits Tax for 1911, estimated at £13,650, and £173 12s. 6d., the underestimated amount of the tax for 1910, have, as you will see been debited to Profit and Loss Account. During the year the monthly profits increased from £11,000 in January, to £13,000 in April, £15,000 in May, £16,000 in August, and £17,009 in November and December, 1911; and should the present favourable conditions continue, there is every reason to believe that the returns will not be lower in 1912. The total ore crushed was 317,579 tons—a slight increase over last year, the stamp duty having been increased to 6.009 per stamp per day. We are indebted to the old workings for one-third of the total quantity of ore crushed (130.000 tons), this being the same as last year, and we look forward to a larger tonnage still in the future. This tonnage from the old workings is not, however, included in the ore reserves. Though the payable ore reserves are slightly less than they were last year, the value is increased in the lower levels; and now that certain necessary work is being completed, it will be possible to carry out development work on a larger scale. The new compressor now on order will be erected in a few months, and will form an insurance against the possibility of a further decrease in the supply of native labour. This, I am sure you will agree with me, is a highly desirable provision to make. We have spent £27,816 15s. 10d. on capital account. The bulk of this amount was required for the purchase and erection of tube mills, sand filter tables, etc., which after mature and careful consideration it was decided to install for the purpose of increasing the extraction. The results have been satisfactory, as will be evident to you when I mention that though the new plant was started only in December, the extraction has reduced the value of the residues from .706 dwt. to .478 dwt., and the still further reductions which are anticipated will, it is expected, enable the Company to liquidate the cost of the plant in a little over a couple of years. With regard to the electrical power for running the tube mills, pumps, and tables, negotiations took place with the Victoria Falls and Transvaal Power Company, who were, however, unable to definitely promise the supply of the necessary current until after the completion of their Vereeniging station. It became necessary therefore to look elsewhere for power, and your directors were fortunate in being able to arrange for a temporary supply and suitable electrical equipment from the Village Main Reef Company. The purchase of powerful pumps for bringing water from the lower levels is still under consideration, but will have to be decided at an early date. You will observe that this year the manager has adopted a form of report which is now general on the Witwatersrand. Though the tabular statements of the past are omitted, I think you will find that the report contains every detail which shareholders require. The practice of appending a report by the Consulting Engineer, commenced this year, will be henceforth continued.

St. George's Coal Co.

During 1911 the St. George's Coal Company produced 171,000 tons of coal. Coal sales realised £95,191 13s. 8d., as compared with £99,320 6s. 10d. last year, a difference of £4,123 13s. 2d. The company produced 11,920 tons less coal than in 1910, in consequence of which and other causes mining costs have slightly increased. Expenditure for plant and machinery amounted to £381 8s. 3d., but the building additions have cost £1,129 0s. 5d. The company has written off as depreciation the total amount of £4,520 9s. 11d., and brought down a credit balance of £8,068 5s. 9d., out of which a dividend of 2½ per cent. has been declared payable in March, making a total of 5 per cent. for the year 1911. A total expenditure of £6,085 18s. was incurred on Lower Burnside property, the cash on deposit amounting to £7,500, so that the company has not done so badly in view of the competition and other difficulties.

Ottoshoop Mining.

Mining in a small way has begun near Ottoshoop. Witkop and Windheuvel are working, and it looks possible that Stinkhoutboom will open soon.

Ntingwe.

A recent contributor to the *Mercury* on the subject of Mr. Edwards's claims at Ntingwe, Zululand, says the claims are being systematically developed, work being concentrated at the lower levels of the hill upon which the auriferous lodes outcrop. The reef is at present being opened up at the 1,200 foot level. It is safe to say that this is the first mine in Zululand or Natal proved to such a depth, the most noticeable feature of the development being that the greater the depth, the richer the gold contents of the lode.

THE PROBLEM OF THE CONTORTED BED.

The Simplification of a Difficult Question—A Matter of Interest to Prospectors—Rietfontein and Promise Series.

The criticism of Dr. Mellor's paper on "The Normal Section of the Lower Witwatersrand Series" by Mr. C. Baring Horwood is an excellent and, we may add, a somewhat rare example of what criticism of that kind ought to be. It is full, detailed, precise, and, above all, couched in language to which no exception can be taken by Dr. Mellor himself. The authors of "The Geology of the Bezuidenhout Valley" would doubtless have long since made an attempt to controvert the views of the Geological Survey with regard to the correlation of the Langerman's Kop and Rietfontein beds if there had been any wide difference of opinion with regard to the matter. The probable relationship of those beds with the Elsburg series has, however, been a more or less common point of agreement between geologists for many years past; the opposite belief, that the two groups of beds were part of the Lower Witwatersrand formation and could be traced more or less continuously on the Western Rand, has been a favourite one with prospectors rather than professional geologists. Mr. Horwood has had exceptional facilities of studying the evidence afforded by the Rietfontein beds, both above and below ground, and his criticism of Dr. Mellor's paper, which is mainly based upon his conclusions in the matter of the Rietfontein series, are particularly worthy of serious consideration. That they will receive this attention at the hands of the Geological Survey cannot be doubted, for Dr. Mellor has wished it to be understood that "no one more than the members of the Survey will welcome discussion on the many debatable points still remaining in Rand geology, for in such a complicated area it is almost impossible for any individual to become acquainted with all the details." With the exception of Mr. Baring Horwood's paper, there has, hitherto, been little criticism worth referring to in connection with the subject under discussion, and he is to be congratulated both upon the amount of knowledge which he evidently possesses of the Witwatersrand formation, and upon the way in which he has come forward to maintain a position which, as we have already indicated, is not altogether in accordance with the most influential geological opinion.

An Important View-point.

The argument brought forward against Dr. Mellor's reading of the so-called "Contorted Bed" which lies south of Langerman's Kop and Rietfontein has very much more than ordinary academical interest. In the first place, the fact that there are two beds at horizons somewhat distant from each other which have physical characteristics so similar that they can sometimes be distinguished with the greatest difficulty, if at all, is one which is obviously likely to lead to serious confusion, as, according to Messrs. Mellor and Horwood, it has already led to some confusion on the West Rand, where Drs. Carrick and Hatch are said to have mistaken the Coronation or West Rand shale for the contorted bed proper. One result of this has been the creation of that "geological ring fence," the Great Basement shales, as a distinct western development of the Lower Witwatersrand Beds, a development with regard to which we expressed some doubt a very long while ago. The difficulties which may arise from the resemblance between the contorted bed and its "double," the Coronation shale has already been pointed out by the Geological Survey, and we may add that some startling statements made by Mr. Olver in his book on "Dykes and Faults," with regard to the succession from Witpoortje eastwards, are explained upon the assumption that he has failed to recognise this resemblance. The importance of looking into the matter still more closely has been abundantly emphasisesd by Mr. Horwood. As the latter very truly remarks, however, the reading of the shale bed beyond Jeppes as Coronation Shale makes a vast difference in the aspect of a question which has been one of the greatest puzzles of Witwatersrand geology. The Bezuidenhout Valley problem is wonderfully simplified, and so, also, is the difficulty of the presence of the Rietfontein series and the great resemblance between it and the beds of the Promise Reef group, a resemblance which has been persistently maintained by those prospectors who have worked along the country north of Roodepoort and Witpoortje. The conformity between the most prominent beds of Langerman's Kop and those of the Lower Witwatersrand has not yet been demonstrated to everybody's satisfaction, but that a relationship does actually exist between Rietfontein and Langerman's Kop, and that there is some evidence of conformity between the reefs of the former and the beds which outcrop to the south is to be seen from the data provided by Mr. F. Graham Bell.

A Prospector's Question.

If it can be proved that the Promise series and the Rietfontein series are portions of one and the same series, an additional impetus will be given to the activity which has spasmodically made its appearance along the North Witwatersrand. Whether the presence of rich ore at Rietfontein is any justification for supposing that the Promise series is likely to be equally valuable may, of course, be doubted. The presence of payable conglomerate over a distance of many miles along the Main Reef horizon has never yet been satisfactorily explained. Such attempts as have been made at a satisfactory elucidation of the problem tend, however, to the conclusion that the more or less uniform payability of the Main Reef series is dependent upon conditions altogether distinct from the physical character of the conglomerates themselves. We may refer our readers to a summary of Dr. Hatch with regard to those points in our last week's issue. There are, nevertheless, remarkably rich stretches of reef along the Promise line, upon one of which Mr. Waites is now working to the north-east of Witpoortje Station. It is possible that some explanation of this phenomenon and its relationship to a similar phenomenon at Rietfontein may be found at a later date, and if the correlation proposed by Mr. Baring Horwood be sustained after further investigation in the field, we shall have further proof of the advisability of a more detailed economic study of the question of the association of gold with certain strata. It is a study which is certain to have useful and, indeed, most valuable results, if only in the direction of eliminating the belief that outside of the Main Reef series there is no sound and solid field for investment. Mr. Baring Horwood is to be congratulated upon his excellent and thought-compelling contribution to the Transactions of the Geological Society of South Africa, and Dr. Mellor and the Geological Survey are to be equally congratulated upon meeting with a critic whose views cannot fail to suggest weakness in their line of evidence which it is essential to remedy as soon as possible. Owing to the fact that Mr. C. Baring Horwood's paper, which appeared in our last two issues, was not submitted by our reporter to the author, several points which required revision were overlooked. For instance, the paper, as printed, mentions in the first paragraph of the concluding portion a quartzite ridge "extending from about one mile south of Rietfontein." This should read "extending from about one mile east of the Geldenhuis mill up to the railway line south of Rietfontein." Several other minor errors also occurred.

COMPETITION IN TRANSVAAL CEMENT MANUFACTURE.

Possible Rivals in the Field—Proposed Works at Klip River—The Strong Position of the Pretoria Company.

THE satisfactory meeting of the Pretoria Portland Cement Co., Ltd., the other day draws attention to the possibility of competition, a matter which was referred to by the Chairman, Mr. H. Eckstein, at some length. Very little definite information is available with regard to this beyond the fact that a long and careful search has been made in the Transvaal by a special representative of the Associated Portland Cement Manufacturers (1900), Ltd., a powerful corporation with a share capital of £4,158,860, and a debenture capital of £4,641,493. This company recently offered for sale some £1,444,000 of 5 per cent. second debenture stock at 91 per cent. for the purpose of extending its already very profitable business. Among the objects of this proposed issue, as we remarked a week or two ago, is the erection of works in certain Colonies and foreign countries, and there can be little doubt that the erection of works in the Transvaal Province falls within the category of the company's prospective operations. Official information as to the results obtained by Mr. Brooks, the agent of the corporation, during his recent visit to this country is not yet available, but it is said that materials which meet with his somewhat rigid requirements in every respect have been found at convenient localities, and that nothing now remains but the completion of the financial arrangements necessary to set the new venture upon a productive footing. Shale of fair quality has been found near the railway in the neighbourhood of Klip River, we learn, and lime of an equally satisfactory kind has been discovered in the Ventersburg Road district. The factory will probably be erected near the railway in the Black Reef neighbourhood, south of Germiston.

THE PRETORIA COMPANY IN READINESS.

In the meantime, as may be learnt from Mr. Eckstein's remarks at the meeting of the Pretoria Portland Cement Co., Ltd., no steps will be omitted to establish the existing company upon a basis sufficiently strong to meet any competition upon favourable terms. Among the proposals of the board in this direction is the lowering of the price of the manufactured article, and the result of this line of action will inevitably be an increase in the demand for a product which is already extensively used in construction works and building operations of all kinds. The field which still remains to be captured by cement manufacturers in this country is a fairly wide one, for a large quantity is annually imported from oversea. The number of persons who are taking up the idea of building houses for themselves is rapidly on the increase, and such a cheapening of structural materials as is contemplated in the matter of cement by the Pretoria company is calculated to give an impetus to the movement.

MR. ECKSTEIN'S REMARKS.

In this connection we quote Mr. Eckstein's remarks from the chair at the annual meeting of the Pretoria company last week. He said, *inter alia*, "One of the reasons why I am anxious that our determination to lower the selling price should be made known, is to endeavour to allay any anxiety which may exist in your minds as to the effect which the erection of a competitive factory may have on the future of this company. Do not run away with the idea that the board have not seriously considered such a contingency; on the contrary we have studied the question very carefully, fully realising its importance. I hear that the Railway Administration have been approached with a request to grant preferential rates on limestone for a longer distance than that over which our limestone is carried, so as to minimise the disadvantage under which a factory situated at a greater distance from the limestone deposit than ours would labour. It would indeed be surprising if a suggestion, so harmful to an established industry such as ours, could be entertained by a Government Department, and I am glad to say that I understand that it met with no response on the part of the Government. No Government can afford to do anything that will harm an industry which after many years of hard struggle has become prosperous and has benefited the country in many ways, which gets all its raw material in the country, and gives employment to a considerable number of people. On the other hand, the Government, as well as the public, have a right, in return for the support we claim, to ask that the price of the commodity which we manufacture should not be unduly inflated. We are fully alive to this aspect of the case. Any further increase in our output will affect the cost of production very favourably, as the enlarged plant is not working at its full capacity, and we are prepared to give the consumer the full benefit of such reduced cost. It may interest you to know that tests which were made recently in the Johannesburg Town Engineer's Department confirm the all-round excellent quality of our product. In fact in all essential features it is shown to be appreciably in excess of the requirements of the revised British standard specification."

Jubilee G.M. Co.

The twenty-fifth annual general meeting of the Jubilee Gold Company, Ltd (incorporated in Natal) was held in Maritzburg a few days ago. Mr. W. J. O'Brien (chairman) presided. The report of the directors was as follows:—The board regrets to inform shareholders that it was found absolutely necessary to close down the mine in August last. The position of affairs was fully set forth in circulars issued to shareholders on the 17th August and 16th November, 1911. The balance sheet shows the following tangible assets:—Investments, £3,789 12s. 1d.; Natal Bank, Ltd., Maritzburg, £1,508 14s. 4d.; Natal Bank, Ltd., London, £94 10s. 2d.; manager's account, £473 3s. 10d.; total, £5,866 0s. 5d. Against the above assets there are the following liabilities:—Sundry creditors, £116 9s. 2d.; unclaimed dividends, £92 7s. 9d.; leaving a balance in favour of the assets of £5,657 3s. 6d.; total, £5,866 0s. 5d. Besides the assets referred to above the company holds 33,000 shares in the Claremont Mines (Rhodesia), Ltd., certain interest in the farm Klipriversberg, five stands in Prospect Township, near Johannesburg, 105 shares in the Witwatersrand Native Labour Association, 36 shares in the Rand Mutual Assurance Co., furniture, vehicles, and livestock; also a number of buildings and its interest in the joint reduction plants. The various assets are shown in the balance sheet at book value; these will be adjusted from time to time as the assets are disposed of. The mining claims are still held by the company, satisfactory arrangements having been made with the Salisbury Company to carry out certain work. When the claims are abandoned, the value of same will be written off property account in the books of the company. Last year you were advised that the board of the Claremont Mines (Rhodesia), Ltd., was considering the question of the erection of a modern reduction plant. Your board is pleased to say that the plant in question was duly installed towards the end of 1911, 15 stamps were dropped at the end of November, and the remaining five were dropped about the middle of December. The annual meeting of the Claremont Mines (Rhodesia), Ltd., was held on the 22nd February, 1912, and arrangements have been made by which copies of the accounts, reports, and proceedings at the annual meeting will be distributed amongst shareholders in the Jubilee Company immediately after the meeting has been held.

THE OUTLOOK FOR RAND MINING.

Chamber of Mines' View—Qualified Optimism—"The Dawn of a New Spirit of Co-operation in Every Department"—Mr. H. O'K. Webber Makes an Eloquent and Convincing Plea for Sympathy and Support in the Great Struggle to Realise the full Possibilities of the Industry.

No aspect of the Rand mining industry was left untouched in Mr. H. O'K. Webber's exhaustive review from the chair at the annual meeting of the Chamber of Mines on Thursday. The following masterly peroration covers the most noteworthy portion of his address:—Now, gentlemen, I have told you what the mining industry has been doing and what it is suffering from. Let me show you the brighter side of the picture. If I am too optimistic, then I ask only that time may prove it. We have in the Transvaal enormous stores of gold-bearing rock of low grade; the largest diamond mine in the world; the cheapest coal in the world, with the two exceptions mentioned; copper and tin areas of great promise, and, what is more important, the latest type of electric power transmission. We have the best mining, mechanical engineers and metallurgists that can be found anywhere, and all we want is a little more co-operation amongst the controllers of the industry. I stand corrected when I say that the competition for the services of the native labourer has almost produced in the last few years an impression that this industry was producing an article of competitive value. But it should go out to the world that a change is coming over the industry. The spirit of co-operation has dawned in every department. Gentlemen, I may be a year too previous in my remarks, but I believe we are on the eve of a more extended use of labour saving appliances, many of which have yet to be invented through necessity. On the surface works I feel sure we are going to see improvement in this direction. We have undoubtedly been allured in the past by the cheap native machine; but the native labourer, to his own eventual loss, is making himself a very costly machine. Every native who carries a white man's tools, every native employed on surface work, costs to-day approximately £50 per annum. There is room for specialising in the direction of saving hand labour. Specialists are required who will devote their time to the installation of mechanical devices which can pay interest, amortisation and cost of maintenance on their own cost, and yet save a part of that £50 per annum, at the same time releasing native labourers for more profitable work. That is where the surface labour will be economised in future, and that is how surface costs are going to be reduced. Many of the natives who are on the surface works to-day, who have learnt, to a certain extent, the use of tools, will then seek underground work, perhaps more lucrative to themselves, or else they may fill up gaps in the labour demand elsewhere, thus setting free others for underground work. And what can be done underground to meet these rising costs due to the expensive pursuit of the native?

Machine Rock Drills.

As I have pointed out, the industry has been driven by necessity to the increased use of machine rock-drills, though it is true that in some cases where machines of the available large types have been installed through necessity, it may have been to the detriment of good mining. The number of machine drills on the Rand has rapidly increased, partly from this cause and partly from the increase in the number of drills of the smaller type, from 3,587 at the end of 1910 to 4,596 at the end of 1911, an increase of 28 per cent. in one year. Owing to further improvements in the smaller drill it is possible that there may not be less than 6,000 drills at work at the close of this year. This forecast is justified by the fact that the consulting engineers of the Rand, by mutual co-operation of ideas and methods, are paying the most careful attention to the experiments now going on for the perfection of the small stope drill, particularly of the small hammer type. I do not think it is too optimistic to say that the results may go far towards revolutionising working costs on the Rand, economising native labour, effecting a saving in the use of explosives, and procuring even cleaner mining than can be practised to-day. I do not say that this can be accomplished in a day, nor with the class of white miner who is constantly shifting from one mine to another, creating disorganised conditions and demoralising the natives. But, given good ventilation, the careful organisation of and attention to dust laying with water, and a determination to stamp out miners' phthisis; given a determination that the work will go hand in hand with the principle of training, carefully advancing, and protecting those white supervisors who have shown a capability to teach and hold the respect of those under them—then I believe it can and will be done.

Possibilities in View.

Gentlemen, I must have wearied you with our labour difficulties, but I have one more duty to perform. It is to point out successfully to the legislators of the Union that the gold mining industry of the Transvaal can be made to last so long as gold-bearing ore can be raised and treated at a profit. I want to tell them as an example that in the course of developing during the past and in the future what to-day can be considered as the payable ore reserves of the Rand, it has been roughly estimated that as much as four hundred million tons of gold-bearing ore will be left behind as unpayable on account of high working costs. It is as well that the significance of this should be appreciated. Taking the average working costs of the Rand of last December at 18s. 6d. per ton milled, and assuming, for the purpose or argument, that these costs could be brought down in the future to 12s. 6d. per ton, thus bringing these four hundred million tons within the margin of payability, it would then be found that the whole of the rock which to-day can be dealt with profitably at 18s. 6d. working costs would yield to an increase of nearly 40 per cent. on the total tonnage dealt with during the year. In addition there would be the profits on the four hundred million tons, while the country would benefit to the extent of, say, a hundred and seventy millions sterling spent locally in working costs in respect of that tonnage. Surely it is to the interest of the people of South Africa to keep this mining industry alive as long as possible. They should jealously look with regret on the low grade ore, which cannot yet, owing to the present high costs of production, be included in the ore reserves. Let them realise the extent of the market for South African produce, and the employment for South Africans, which this industry could offer.

Industrial Policy.

The Government may deem it right to do everything possible to foster the agricultural industry by carrying agricultural produce at cost price to the coast, while the railways of the Union are making a profit on the carriage of coal and stores charged to the working costs of the gold industry that represents to-day a charge of approximately 1s. per ton of ore milled. But where, I ask, can be found a more certain market for the producers of agricultural and other produce within the Union than that afforded by the present and future mining and industrial population of South Africa? If the taxation now taken by the Treasury out of the mining industry is reduced to a figure which will enable the greatest payable tonnage of profitable mineral being raised and treated, South Africa will continue in its prosperous course. But if the internal industrial markets are gradually pinched out of existence, and the country has to depend mainly for its trade on the export of agricultural produce in competition with Australia and South America in the markets of the world, it will not only receive a terrible set-back, but with the natural climatic disadvantages the people of the Union will have a very severe struggle to face in the future. It is for the Ministers of the Union to study this problem; it is for them to tell the people of the Union that the metal and diamond mining industries must be fostered as their most precious possessions, because they distribute millions in wages, millions for the purchase of South African produce, and pay a preponderance of the customs dues; that to keep these industries alive for many generations is the duty of everyone, even if it means some sacrifice to the indirect revenues of the State.

GROUP RESULTS IN 1911 AND 1910.

Some Interesting Contrasts—Profits and Profits per Ton.

CONTRASTING the statistics of gold winning and profit earning announced by the Witwatersrand gold mining companies in respect of 1911 and 1910 operations, it must be admitted that whilst the gold output has expanded, profits have contracted. The lower profits earned may be attributed to a variety of causes, chief amongst which a scarcity of labour has to be noted. Then again not a few companies have been working under abnormal conditions, because of the non-completion of reorganisation consequent on amalgamation, centralisation of plants, etc. In the following tables the returns of the various mines as to tonnage milled, aggregate profits earned, and profits per ton are classified according to groups. Although the list is not quite complete, it is representative of the majority of Rand gold mines which were productive throughout 1911. For purposes of comparison a statement of the 1910 results is recorded in parallel columns:—

Company.	Ore Milled.		Working Profit.		Profit p. Ton			
	1911	1910	1911	1910	1911		1910	
	Tons	Tons	£	£	s.	d.	s.	d.
CENTRAL MINING GROUP.								
Bantjes Consolidated	273.213	97,205	53,852	12,531	3	11	2	7
City and Suburban	317,589	308,226	174,005	99,554	9	11	6	6
Crown Mines ...	1,618,400	1,513,900	1,272,944	1,181,200	15	9	15	7
Durban Rood. Deep	263,740	240,510	60,668	61,550	4	7	5	1
Ferreira Gold	310.300	346,150	189,263	300,869	12	2	17	4
Ferreira Deep	371,700	343,097	404,965	491,000	21	9	28	7
Geldenhuis Deep ...	801,860	826,610	235.088	260,320	5	9	6	4
New Heriot	144,643	149,990	114,078	107,500	15	10	14	4
New Modderfontein	574,600	544,300	370,171	312,642	12	10	11	6
Nourse Mines	621,251	535,913	237,892	225.160	7	9	8	6
Robinson Gold	591,700	638,900	910,919	936,796	30	11	29	4
Rose Deep	695,100	656,500	349,144	314.850	10	0	9	7
Village Main Reef	476,260	493,300	467,125	462.330	19	7	18	6
Village Deep	569,500	507,800	225,828	153,672	7	11	6	1
GOLD FIELDS GROUP.								
Jupiter	314.650	267.379	36,942	40.273	2	2	3	0
Knights Deep ...	727.830	667.240	281.745	298,755	7	9	9	0
Luipaard's Vlei ...	201.282	202.972	29,035	17,052	2	11	1	8
Robinson Deep ...	568.700	527,750	405,046	344.208	13	10	13	0
Sim. & Jack Prop.	855.800	788.210	582,913	588,478	14	7	14	11
Simmer and Jack E.	364.570	382,040	28,043	52,674	1	6	2	9
Simmer Deep	541,750	480,789	66,657	76,266	2	6	3	2
NEUMANN GROUP.								
Cons. Main Reef ...	245,200	257.112	90.064	80,842	7	5	6	3
Knight Central... ...	315,175	302,226	70,813	78,908	4	6	5	4
May Consolidated ...	184,730	181,601	126,433	135,735	13	8	15	0
Main Reef West ...	183,772	202,483	116,161	159.081	12	7	15	8
Witwatersrand Deep	500,327	476,760	301,539	323,407	12	1	13	6
Wolhuter	348,465	314,310	175,942	131,554	10	1	8	6
BARNATO GROUP.								
Cons. Langlaagte ...	231,537	275.463	83.338	86,097	7	2	6	3
Ginsberg	138,459	142,554	59,078	51,817	8	7	7	3
Glencairn...	227,753	249.189	28,776	29.066	2	6	2	5
New Primrose ...	280,648	257.168	217,641	215.461	15	7	16	9
New Rietfontein ...	180,822	192.452	44,191	20,839	4	11	2	2
New Unified	122,345	123,345	53,046	34,710	8	7	5	7
Wit. Gold (Knights)	420.160	426,910	174,238	215,576	8	3	10	1
ALBU GROUP.								
Aurora West ...	131,359	128,153	30,141	31,820	4	7	5	0
Cinderella Consol ...	192.341	181,000	38,888	51,390	4	1	5	8
Meyer and Charlton	117,154	153,716	96,189	109.284	16	7	14	3
New Goch	344,865	338,615	127,913	141,933	7	3	8	4
Van Ryn	422,610	386,461	272,804	300,222	12	11	15	6
West Rand Consol ...	319,640	242,203	50.740	41,736	3	1	3	5
Roodepoort United ...	366,570	250,642	82,308	32,532	4	6	2	7
FARRAR—ANGLO-FRENCH.								
East Rand Prop.	2,194,552	2,126,334	913,862	1,249,038	8	4	11	10
New Kleinfontein ...	451,054	466,882	237,720	280,285	10	6	12	0
GOERZ GROUP.								
Geduld Proprietary ...	138,960	127,510	38.748	15,734	5	7	2	6
Lancaster West ...	258,943	252,098	40,967	31,903	3	2	2	6
Princess Estate ...	151,841	120,414	25,739	61,755	3	5	10	3
ROBINSON GROUP.								
Langlaagte Estate ...	625,185	629,514	219,400	315,150	7	0	10	0
Randfontein Central	2,157,331	1,168,281	862,000	542,750	8	0	9	4
OTHER GROUPS.								
Jumpers Gold	125,840	125,470	39,291	60,833	6	4	9	9
Salisbury	88,950	97,500	5,619	20,894	1	4	4	3

New Kleinfontein.

The report of the directors for the quarter ended 31st December, 1911, states:—

Revenue and Expenditure.—To mining account, £66,924 3s. 3d., per ton milled, 11s. 10.077d.; mine development redemption, £9,102 10s. 6d., per ton milled, 1s. 7.324d.; reduction expenses, £23,249 19s., per ton milled. 4s. 1.358d.; general charges. £8.707 1s. 2d., per ton milled, 1s. 6.485d. Total working costs, £107.983 13s. 11d., per ton milled, 19s. 1.244d.; net working profit, £60.643 18s. 4d., per ton milled, 10s. 8.744d.—£168.627 12s. 3d.; £1 9s. 9.988d.

Note.—(1) No allowance has been made in the above statement for the Government profits tax, estimated at £5,420 3s. 7d. (2) Gold reserve: Since the declaration of the December output the Board has decided to abandon the practice of carrying gold in reserve. The value of the reserve at 31st December last, viz., £7,926, will be treated as revenue in the accounts for the past year, but is not included in the above statement.

Mine, shaft sinking.—Number of feet sunk. 731ft. 6in. Development—Number of feet driven, risen, and sunk (excluding shafts). 4,890ft. 6in.; footage sampled, 2,520ft.; average milling width, 44.07 ins.; average assay value, 6.90 dwts; estimated tonnage of ore exposed by drives, etc., 119,940 tons.

Ore treatment.—Tonnage mined, including ore obtained from development faces, 140,695 tons; tonnage received from surface dumps, —— tons; total, 140,695 tons; less sorted out (19,944 per cent.), 28,061 tons; tons to mill, 112,634; add difference in bins, 416 tons; ore milled, 113,050 tons.

Capital expenditure.—The expenditure for the quarter was as follows:—Excess development, £1,689 19s. 3d.; shaft sinking, £10,489 2s. 11d.; surface equipment, etc., £17.734 9s. 11d. Total, £29,913 12s. 1d.

Ore reserves.—The payable ore reserves at the end of the quarter were as follows:—Payable, 1,146.531 tons, milling width, 43.94 ins., 7.496 dwts. value; unpayable, 460.484 tons, milling width, 40.93 ins. 3.676 dwts. value. Total and averages, 1,607,015 tons, 43.068 ins. milling width, value 6.40 dwts.

Dividend.—An interim dividend (No. 15) of 7½ per cent. (equal to 1s. 6d. per share) has been declared payable to all shareholders registered in the books of the company on the 30th December, 1911. Warrants in payment of this dividend will be despatched to all shareholders from the Head and London Offices about the 10th February, 1912.

Mines of the Witwatersrand.

XI.—PRINCESS ESTATE AND G.M. CO., LTD.

Reorganisation Virtually Completed—Main Reef Development Values—Recent Returns Abnormal—The Financial Aspect—Large Expenditures on Capital Account.

Reorganisation of the Princess Estate Company has been proceeding for some months past, and it will be some little time yet before the company is in a position to reap the full benefit of the amalgamation of the Roodepoort Central Deep and Princess Estate and G.M. Company, the absorption of the West Roodepoort Deep, Limited, and the Norman Properties Syndicate, Limited, and the enlargement of the company's plant. The Princess Estate has recently been working at a loss. In the three months ending 31st December, 1911, the loss on working amounted to £6,251, or 3s. 8·6d. per ton milled, whilst in January of this year a loss of £1,988 was recorded.

Princess Estate: Central Treatment Plant.

Abnormal Conditions.

These unprofitable operations are easily understood when it is taken into consideration that the remodelling of the equipment and change over to the new plant, which was only completed in December, seriously interfered with operations. Absorption of gold in tube mills, plates, and furnaces, combined with a decline in grade, which there is every reason to think is only temporary, and a severe shortage of native labour, have all assisted in rendering recent returns abnormal. As regards the operations for last month, it is a little early as yet to say whether a small profit or a small loss will be recorded, but it would, at any rate, seem that the Princess Estate is fast approaching the turning point in its career, if that critical juncture has not already been reached, and that the company will resume the payment of dividends in the early future.

History of the Company Summarised.

Before describing the new equipment and the work of reorganisation that has been carried out at the mine, it may be advisable briefly to cover the history of the company, and to outline its present status as regards property and capital. The Princess Estate Company was originally registered in 1889 and reconstructed in 1890. The first dividend paid was in June, 1897—10 per cent. The company restarted a portion of its 50-stamp mill in 1904, increased the battery to 60 stamps in 1907, and in 1908 added a slimes plant. Payment of dividends was resumed in December, 1908, and up to date the company has distributed 72½ per cent. amongst shareholders. Last year the Princess absorbed the Roodepoort Central Deep (a company which in eight years previous to 1910 secured an aggregate output of £1,181,215 from 708,924 tons milled), the former Saxon property, and the West Roodepoort Deep. The company now possesses the freehold of 3,341 acres of estate, and the enlarged venture has a mining area containing at the end of 1910, about 665 intact Main Reef bearing claims and about 521 intact claims carrying South Reef. The authorised capital is £650,000, the registered capital (all issued), £575,033, whilst at the end of 1911 the balance of debenture issue unredeemed amounted to £6,460, which is due for payment on July 1st, 1912.

Princess Estate: The Central Shaft.

A Broken Mine.

The Princess Estate has always been a difficult mine to operate. The property is broken by innumerable faults, and the rich South Reef, which has constituted the mainstay or backbone of the property, is exceedingly thin. Under these conditions mining costs have, of course, always ruled at a high figure. Fortunately for the company, the dislocations of the reef by faulting are remarkably uniform as regards the direction in which the reef is thrown. Were this not the case, and the management had continually to be groping and prospecting for sections of ore, the Princess could scarcely, we imagine, be worked at a profit. The Roodepoort Central Deep section is a much more settled proposition, but here, too, on account of the thin character of the South Reef and the small capacity of the plant, working costs have always prevailed at a high figure. Up to the end of 1910 the average working costs of the Roodepoort Central Deep Company had been 27s. 7d. per ton. As to the other areas absorbed—the West Roodepoort Deep and the Norman Properties—it may be remarked of the former that the ground has been much faulted, especially in the region of the western shaft, whilst in the Norman properties ground—the old Saxon mine—mining operations were carried on with difficulty, a large dyke and great quantities of water being encountered.

The Benefits of Amalgamation.

We do not here propose to deal at length with the several advantages claimed for the amalgamation of these mining areas, but in order properly to appreciate the present-day position of the Princess Estate, it will be necessary briefly to recapitulate the outstanding beneficial features of the fusion. Firstly, as regards the old Princess, the available tonnage of South Reef ore remaining in the mine was recognised to be decreasing rapidly. Hence, to counterbalance the unavoidable decrease to be expected in the profit per ton, it was deemed essential to enlarge the capacity of the plant. Such a step, however, would not be justified if the company relied only on the quantity of ore still remaining in the Princess property. Accordingly negotiations for the acquisition of further ground were commenced. The old Saxon Company did a considerable amount of work in opening up the property, and a certain quantity of ore was crushed. The results then obtained were not profitable, but might be attributed to the fact that the conditions in those days were very different to what they are to-day. The Roodepoort Central Deep property lies immediately south of the Princess mining area, and the two mines are already connected by a winze. This company suffered considerably in the past in consequence of having only one shaft, which prevented it from handling a sufficient tonnage to enable it to earn such profits as would have made a return to its shareholders possible. The financial position of that company was such that the sinking of another shaft was precluded while all profits earned would for some time to come have been swallowed up in paying off its debts, which consisted partly of debentures and partly of current liabilities. The property consists of 205·51 claims, and, although it had mined and milled a portion of its South Reef, there still remained very considerable reserves—partly opened up and partly untouched—to be exploited. In the past the company has done very little work on the Main Reef, but, in view of the success obtained by other companies in the district in developing this ore body, it recently directed its attention thereto, with satisfactory results.

The West Roodepoort Deep property adjoins the Roodepoort Central Deep on the west, and by extending the workings of the former company to the boundary the two mines can be quickly connected with each other. The West Roodepoort Deep owned 231·12 claims, situated south of the Main Reef outcrop, and as, owing to the unsatisfactory financial position of the undertaking, the producing stage was never reached, the original ore contents are still intact; they have, however, been proved to a small extent by means of two shafts and development drives. Speaking at the last annual meeting of the Princess Estate, Mr. M. Elkan, who presided, remarked: "If the amalgamation proposals are sanctioned, it is your Board's intention to concentrate the reduction operations at the site of the present Roodepoort Central Deep plant, and to make immediate provision for the treatment of 18,000 tons per month. Naturally, we do not intend to stop there, but we hope to be able in due course to considerably increase this tonnage. Before we can move in that direction, however, we must be absolutely sure that we have ample ore reserves, and no pains will be spared to push development ahead with all possible speed. The Roodepoort Central Deep workings have already attained a considerable depth—that company's main shaft has been sunk 3,604 feet—while the shafts of the West Roodepoort Deep were stopped at 1,609 feet and 1,690 feet respectively. It will therefore be much cheaper to push development work forward in the latter property. In doing so the two mines will be connected, one effect of which will be to considerably improve the ventilation in the Roodepoort Central Deep section, which at present is not all that could be desired."

Development and Ore Reserves.

It will now be necessary to consider the position with regard to development. In the following table is stated the footage driven on reef during 1911, together with values and widths:—

Quarter ending—		Feet driven, &c., on Reef.	Aver. Value. Dwts.	Width. Ins.
March	South Reef	1,344	6·98	24
	Main Reef	1,690	6·85	26·5
June	South Reef	1,075	8·7	24
	Main Reef	915	5·37	46·45
September ...	South Reef	1,175	7·19	24
	Main Reef	755	5·77	40·43
December ...	South Reef	435	5·8	24
	Main Reef	665	4·2	41·2

At the end of 1910 the ore reserves stood at 665,000 tons of 7·8 dwts. value which have been increased during 1911 by 35,871 tons, so that on the 1st January, 1912, they stood at 700,871 tons of 7·44 dwts. value. Large quantities of water have been pumped out in the Saxon and West Roodepoort Deep mines, and it is anticipated in the future substantial tonnages of ore will be added to the reserves from these western sections. For the time being, however, attention is being concentrated on the Princess and Roodepoort Central sections. An increasing proportion of Main Reef has been mined and milled of late years, but the South Reef is still the larger contributor to the battery, although, with a more centralised plant and a lower rate of expenditure, it is evident that the lower grade Main Reef sections will yield increasing profits. And on the subject of costs, it should here be made clear that, despite enlargement of equipment and the use of more efficient machinery than heretofore, this Roodepoort venture, on account of the peculiar conditions obtaining there, cannot be expected to operate at anything approaching the low figures recorded by the mines of the Central and East Rand possessed of big mills and large widths of reef. On the average, 30 per cent. of the ore mined has to be rejected as waste, and, as already stated, there is scarcely a 100 ft. drive in the Princess Estate section which is free of faults. However, when the company is operating on a crushing basis of 18,000 tons or more per month, a substantial reduction in administrative and operating charges will result, with a consequent beneficial influence not only on profits but also in giving to substantial tonnages of low grade ore a profitable value.

The Remodelled Surface Works.

On the old Princess surface works practically no work is being carried on at present. The mill is idle, but slimes are being treated there. Ore drawn through the Princess shaft is conveyed by locomotive to the Roodepoort Central mill. Here the new equipment is being concentrated. Machine shops have been centralised, and the Central mill, which now consists of fifty stamps and five tube mills, is being increased by a further ten stamps, which are being moved from the Princess section, and which should be ready for work in the course of a few weeks. The cyanide plant has been remodelled, and is of very efficient pattern, with Caldecott table and cones, Butters distributors, etc. Three air compressors of from 75 to 80 drills capacity are installed. Until quite recently the Princess Estate Company had not employed machine drills for stoping, but latterly Ingersoll and Waugh hammer drills have been utilised, and the results secured have been encouraging. Of course, on the thin rich South Reef a policy of machine stoping has to be proceeded with very guardedly, despite an acute shortage of labour. The labour complement of the Princess is, as a matter of fact, placed at about 4,100. but at present only somewhat over 50 per cent. of this number are registered in the company's books, and until an adequate supply of labour is available the Princess company cannot reap the benefit of the reorganisation and renovation work recently carried out. However, the labour position is improving, and it is hoped that within the next few months the company will be earning substantial profits, and at the same time development will be actively prosecuted.

RECENT RETURNS.

It will here be of interest to record the results secured by the company last year:—

Period.	Stamps.	Tube Mills.	Tons Milled.	Yield per Ton.	Costs per Ton.	Working Profit.
Quarter ended						
March 31 ...	110	—	49,373	32/4	26/ 7	£14,333
June 30 ...	110	—	45,794	32/6	27/ 2	12,125
Sept. 30 ...	110	—	37,573	28/6	27/11	1,184
Dec. 31 ...	70-80	4	33,628	24/2	27/11	*6,251

*Working loss.

In connection with these returns, it should be noted that the shaft acquired from the Roodepoort Central Deep, Ltd., which had caused considerable trouble for some time, had to be closed down for repairs about the middle of the year. The tonnage crushed and the profit earned were adversely affected during the closing down period. Advantage was taken of this stoppage to effect certain improvements in connection with the unification of the properties. In the latter part of the year the starting up of the new plant militated against normal returns being secured.

THE PRINCESS SHAFT.

FINANCES AND GENERAL OUTLOOK.

The financial position of the amalgamated concern was dealt with by Mr. Elkan at the last annual meeting, who stated: "Messrs. A. Goerz and Co., Limited, have agreed to subscribe for 132,700 shares at 27s. 6d. per share, less 5 per cent. commission. This issue will produce £173,339, out of which the liabilities and liquidation expenses of the Roodepoort Central Deep have to be paid, as well as those of the West Roodepoort Deep. The latter are limited to £1,500. The purchase price of the Norman Syndicate shares and the liabilities of that Syndicate have also to be met. The balance, together with our own cash—amounting to about £14,000, and not £8,000 as estimated when we issued the circular of the 30th December last—will give the enlarged company about £108,000 cash to start with. The cost of the proposed alterations and additions to the plant is estimated at about £66.000. This will leave a substantial amount available for further developing the properties."

PRINCESS ESTATE: THE CENTRAL MILL.

Expenditure on machinery, plant and buildings during the year amounted to £66,049 1s. 2d., and in addition £37,294 was spent on dewatering mine workings, repairing shafts and plant at the Roodepoort Central, West Roodepoort Deep, and Norman Properties Syndicate. The company has now almost completed the remodelling of the plants, and with the additional 10 stamps at work, and given an improved supply of labour, the Princess Estate should very shortly be rewarding shareholders by the declaration of increasing dividends. Having regard to the faulted nature of the reefs in the Princess section, and to the facts that the West Roodepoort Deep and Saxon areas are as yet unknown quantities, it would be extremely rash to venture any predictions as to the life of the new concern. However, one may with confidence assert that the proposition will have a period of productive existence which will run into a considerable number of years. It may perhaps at some future date be deemed in the best interests of the company to further extend the reduction and treatment plants at the Central mill, but before this is done one would like to see development pushed on with, and the value of the ground situated to the south-west of the original Princess mine more definitely established than is the case at present. That payable values are being secured over large stretches of Main Reef is a most gratifying feature.

Anglo-German Tins.

The secretary writes:—"I am instructed to inform you that the following telegram has to-day been received from the manager of the company's property in German South-West Africa: 'Found half ton tin near No. 2 cutting.'"

Pretoria Copper and Tin Fields.

The sixth annual meeting of the Pretoria Copper and Tin Fields, Ltd., was held last week. Mr. D. Symons presided. The chairman, in moving the adoption of the report and accounts, stated that the position was in no way altered from last year. The report was then adopted. The retiring directors, Messrs. F. H. W. Roos and William Bleloch, were re-elected, and the auditors were re-appointed.

THE E.R.P.M. MEETING.

Leading Points in the Chairman's Speech—Details of Development—The Debenture Issue—Life of the Property—Contemplated Capital Expenditure.

In the presence of a large concourse of shareholders, Sir George Farrar, chairman of the East Rand Proprietary Mines, Limited, presided at the annual meeting, which was held in the Board Room of Exploration Buildings, on the 28th ult. After dealing with the various questions which were discussed at length at the recent meeting in London, and pointing out the arduous nature of the work carried out by the European Committee, Sir George proceeded to review the actual position of the company. Notwithstanding the incorrectness of the various figures presented at various times during the past year, everything had been cleared up in the annual accounts, and the balance sheet presented at the meeting correctly reflected the position of the company as at December 31st, 1911. The balance sheet will be found in another part of this issue. Details of ore reserves and development will be found in the Superintending Engineer's report, which is also published in this issue. Before leaving the development position Sir George pointed out the importance of what has hitherto been called the Cason "Overlap," now known as the South Section. "Should the work there open up a large quantity of payable ore," he explained, "the ore reserves will be increased more expeditiously and at a cheaper cost than by the ordinary development of the mine, as no shaft-sinking will be required, and for that reason development work in the Cason block will, provided the present indications continue, be mainly concentrated on this reef. Up to now, our information is limited to the knowledge that the section extends from the 23rd level up to the 18th, but it is possible that this reef may extend nearer to the surface than was hitherto anticipated." With regard to the apparent discrepancy between ore reserve figures quoted in London and those in the engineer's report, it was shown that an alteration in the pay limit, according to Mr. Ross Skinner's recommendation, sufficiently elucidates the difference. "You will, however, understand," said Sir George, "that the payable ore reserve tonnage is not of a fixed character, being entirely dependent upon costs which directly affect the factor of payability, so that any lowering of costs, which I hope will take place, is accompanied by an immediate gain in the pay tonnage. It does not mean that the whole of the unpayable tonnage must be written off. It means that the profitable working of a portion of it becomes possible with any lowering of working cost."

The Debenture Issue.

In referring to the financial position, Sir George Farrar explained the debenture figures at some length as follows:—"The expenses in connection with the debenture issue of one and a half million pounds amounted to £128,212 4s. 11d., of which £73,500 is accounted for by the issue of 14,000 shares at a premium of £4 5s. each to the guarantors, this premium being shown on the liabilities side of the balance sheet. You will note that the debenture expenses are separately stated on the balance sheet after the items of capital expenditure. The directors considered the advisability of writing off a portion of these expenses in this year's accounts, but came to the conclusion that it was better to show the full details of the transaction in the balance sheet, a reference to which will show that the amount of share premium and profits appropriated for capital purposes, totalling £117,328 7s. 2d., could have been set against this expenditure without altering the balance of appropriation account. It is, of course, evident that in any case the redemption of the debentures out of profits by fifteen annual drawings will achieve the same effect as if the amount were specifically written off. Of course, in the event of the debentures being converted into shares instead of being reduced the expenses could then be written off. You will have noticed that the profits utilised in past years for capital purposes, amounting to £554,392, as shown in the balance sheet of 1910, have been re-transferred to the credit of appropriation account, and that the expenditure on excess development, viz., £510,337 13s. 10d., has been written off against them, so that in the balance sheet before you the item development has been brought back to the figure at which it stood at date of amalgamation, viz., £10,000. This procedure has been rendered possible owing to the fact that a portion of the capital moneys provided by the debenture issue has been allocated to that expenditure on capital account, which had previously been met by temporarily appropriating profits earned. The raising of these capital funds has enabled us to re-allocate these profits, and this has accordingly been done. You will note that an amount of £57,828 7s. 2d. was provided out of profits earned during the year for capital expenditure in excess of the amount provided by the debentures." With regard to the new classification of development work mention in Mr. Skinner's report, it was pointed out that the increase in working costs due to this revised system of allocation would amount to approximately 1s. 6d. to 1s. 9d. per ton milled, but, on the other hand, the cost of development would be greatly reduced. An amount of 3s. per ton milled on working costs has been decided on in order to make provision for current development, and this charge will provide ample funds for the development of a payable tonnage in excess of milling operations. "I wish to make it quite clear," said Sir George, "that all development work, excess and current, from the date of amalgamation has been paid out of profits. This has permitted the moneys raised by the £1,500,000 debentures, excluding expenses of issue, being allocated to shaft-sinking and surface equipment."

Estimated Capital Expenditure.

The capital expenditure for the year 1912 is estimated at £297,500, which is much less than anticipated. Among the events to be provided for in the estimates is the possibility of striking the water along the Witwatersrand dyke. "In considering this question," Sir George explained, "it was at first thought that a scheme capable of dealing with one and a half million gallons of water daily might be sufficient, on the assumption that it would be possible to tap the water in quantities that could be dealt with. The risk of such a policy is, however, too great, and I am of the opinion that provision should be made for the full quantity of three million gallons per day, with a reserve plant for another million. The estimates have, accordingly, been based on the above recommendations, and amount to the figure shown."

The Life of the Mine.

In reply to comments upon the grade of the ore reserves and its effect upon the probable life of the mine, Sir George Farrar remarked:—"I should be quite prepared to take the mine from you at a very high valuation after ten years. The life of the E.R.P.M. is a very, very long life. As for it being a life of ten years, with all due deference to Mr. Cohen, I think he is talking through his hat." A cheerful and confident note was struck in Sir George's final remarks when he said:—"Almost everyone seems at the moment to take a pessimistic view of the industry; but, judging from facts and knowledge before me, I am convinced that, with the cooperation of the various groups and with improvements and economies in every direction, there is a prosperous future before it, and, had I time, I think I could prove that conclusively to you."

MINING EXAMINATIONS.

Private individual tuition for Mine Managers', Mine Captains', Mine Surveyors', Mechanical Engineers' and Enginedrivers' Examinations, Practical Mathematics and Electrotechnics. Correspondence lessons where personal tuition is impossible.—E. J. MOYNIHAN, Consulting Engineer, 10, Anglo-Austrian Buildings, Box 2061, Johannesburg.

OFFICIAL REVIEW OF LABOUR AND OTHER QUESTIONS.

Points from Chamber of Mines' Annual Report—Increased Cost—A Liberian Offer Refused—Recruiting Conditions—Railways and Water Supply.

The annual report of the Executive Committee of the Chamber of Mines, submitted to the general meeting of members on Thursday states :—The percentage of native labourers from the various sources of supply in the service of members of the association was approximately as follows : Portuguese East Africa, south of latitude 22deg. S., 40.33 per cent. ; Portuguese East Africa, north of latitude 22deg. S., 11.26 ; Cape, 23.19 ; Transvaal, 8.06 ; Orange Free State and Basutoland, 4.30 ; Natal, 8.61 ; Swaziland, 2.07 ; Rhodesia (inclusive of natives via Pietersburg), .51 ; North-Eastern Rhodesia, .04 ; British Bechuanaland, .49 ; British Nyassaland Protectorate, .98 ; German South-West Africa, .13 ; and other sources, .03. These figures refer only to the membership of the Witwatersrand Native Labour Association. As far as the wider areas of employment in the Transvaal are concerned, the official statement of the Department of Native Affairs shows that at December 31st of last year 295,844 natives were employed in proclaimed labour districts of the Transvaal. Of these, 206,563 natives were engaged on mines and on the various classes of works specified in Part I. of the Coloured Labourers Health Regulations, 1906 (Transvaal), and 89,281 natives were in other employ. There were in the employ of the Transvaal Government at December 31st last 14,257, as compared with 16,553 at the end of the previous year. 207,201 natives were recruited and distributed by the association to its members during the year, whilst at the end of the year there were 195,850 natives in the employ of members of the association. The recruits from the Portuguese East Coast invariably remain under contract for a period of one year, but Cape Colony and Natal natives do not incline towards more than six-monthly or rarely exceed nine-monthly contracts. The process of continued replacement has thus to be reckoned with, and is a factor frequently lost sight of by shareholders in Europe and others interested in the welfare of the mining industry. Attendant upon this phase of the question is also the factor of the training of raw recruits, which means an increase in the working costs, necessitated by the employment of a greater number of natives than would be necessary if more permanent conditions of employment prevailed. In addition to this drawback, there is the greater risk of accidents through the training of novices at the work, and the extra cost involved in the prevention of accidents.

RECRUITING CONDITIONS.

The general conditions of recruiting operations by the association throughout the various Provinces and districts may be put briefly as follows :—The recruiting results obtained from Portuguese East Africa south of latitude 22deg. have not varied materially in recent years. The substantial advance made in the recruiting results from the districts north of latitude 22deg. S. during the 1910 season was not maintained last year. This may be partly due to a higher physical standard having been required in the natives recruited in tropical districts. From Mozambique and Nyasa districts the numbers increased by 1,007 and 478 respectively, but the districts of Zambesi, Quilimane, Tete, Beira, and Chinde showed a decrease of 1,056. The Government of the Nyasaland Protectorate is not very favourable to recruitment of natives for the mines owing to the increasing demands for labour by the planting community and other employers within the Protectorate itself, notwithstanding that the number of adult males far exceeds the local demands. A number of natives desirous of seeking work in the Transvaal do, however, with the cognisance of the Protectorate Government, cross into Portuguese territory and engage themselves for service on the mines. In addition to this particular class, some 900 natives were given travelling passports by the local authorities to proceed to the Witwatersrand for work. A greater proportion of British South African natives engaged themselves for the mines independently of the recruiting agents.

COMPETING SERVICES.

As will be seen from the foregoing statistics, the supply of native labour was fairly satisfactory in the early part of the year, but it gradually fell off towards June, and was far short of the requirements of the mines by the end of the year. Various causes contributed to this position. The demands of the coal mines had increased, and the number of natives required for gold mines at December 31, 1911, was greater than at December 31, 1910. A decrease in the number of natives recruited became apparent in May, more particularly in the Portuguese East Coast area. A certain amount of competition arose in connection with recruiting by the Railway Department in the Transkei for the construction of new railway lines. Further, an unusually large number of time-expired natives took their discharge during the winter. In view of various factors, the labour shortage began to be keenly felt in July, and the increase usually to be expected during the last three months of the year did not take place. The result was that the supply of the requirements of the gold mines was considerably reduced. No effort was spared in the recruiting districts to stimulate the supply, but without tangible results.

INCREASING COST.

The most serious aspect of the labour supply of the gold mines is the ever-increasing cost of recruiting and an increase in the wages of natives. The inevitable conclusion to be drawn from the foregoing facts is that notwithstanding persistent efforts in all areas at present available for recruiting purposes, the supply of natives offering themselves for work is inadequate to meet the demand from the various industries in this country requiring unskilled labour. It is satisfactory to be able to record that the Government is fully alive to the seriousness of the position, and it is hoped they may devise means of importing European labour for agricultural and domestic purposes in order to set free those natives who are so employed at present for work on the mines.

A LIBERIAN OFFER.

Early in the year an offer was made to the Chamber of a concession from the Government of the Liberian Republic to recruit natives in that country under contract. Enquiries were made as to the possibilities of the proposal, and the Government was approached on the subject of obtaining permission to import this class of labourer. A reply was, however, received to the effect that the Government was not then prepared to sanction the importation of native labourers from Liberia for employment on the Witwatersrand mines.

TROPICAL NATIVES.

In the middle of the year the Government made representations to the Chamber on the grave importance of the mortality rates amongst natives from tropical areas. The subject had been a source of much anxiety to those responsible for the control of the mines for a considerable time, and in conjunction with the Board of Management of the Witwatersrand Native Labour Association the Executive Committee of the Chamber had a meeting with the Minister of Native Affairs, at which this question was discussed in its various aspects. A special scale of diet was fixed, and improvements and additions were made in the system of change-houses. The Chamber is united in its desire to act in concert with the Government in devising means to overcome the difficulties due to climatic changes and physical temperament of these natives, and nothing within reason will be left undone towards that end.

COAL TRAFFIC ON RAILWAYS.

There have been complaints in connection with the supply of trucks for coal traffic, arising from the admitted shortage of rolling stock, delay in clearance by the railway of trucks from despatching stations, and in some instances delay on offloading. At the instance of the Transvaal Coal Owners' Association, the Executive Committee took the matter up and appointed a small sub-committee to meet the General Manager of Railways. At the conference which took place in July it was pointed out that owing to the deficiency in number of coal trucks, many of the mines had been on the verge of stopping work and the collieries had at times been at a standstill. The General Manager admitted the seriousness of the position, which, he explained, had been accentuated by various causes, including the restricted number of locomotives. He was able to state that rolling stock for coal traffic was to be supplemented almost at once by the addition of one hundred and thirty-five large trucks and fifty hopper trucks, and anticipated that the position would be satisfactory by the end of the year. The mines were again circularised to give special attention to the expeditious discharge of the coal trucks in their sidings. Difficulty, however, has since been experienced by the Transvaal power stations, and correspondence on the subject with the railways is in progress.

RAILWAY CONSTRUCTION.

Towards the end of 1910 certain mining companies were asked by the Railway Department to contribute to the cost of the construction of the Benoni-Welgedacht Railway, and as this request was unusual, the matter was taken up with the Department. The Chamber pointed out that this action was wrong in principle, as a railway line is intended for the convenience of the public, and a minimum standard of traffic ought to be considered before construction is undertaken. The explanation afforded was that the line in question was constructed for the benefit of the mines primarily, though some additional traffic might be developed thereby, and that previously to the decision as to the construction of the line two companies had applied to connect up with the main line from Springs to Witbank. Under these circumstances the Railway Department considered their request for contributions from mines interested was not unreasonable, more especially as the contributions are considerably less than the cost would have been to those companies to obtain communication with the main line. This contention, however, has not altered the view of the Chamber as regards the principle involved. Up to the end of the year no progress has been made with the construction of this line.

WATER SUPPLY.

Owing to the increased demands for the supply of water to the mines, and the drought, the quantity available from the sources utilised by the Rand Water Board was found to be inadequate about August, and steps had to be taken to reduce the consumption by one million gallons per diem, as far as the mines were concerned. This restriction had to be maintained to the end of the year. The Rand Water Board had arranged to develop and extend certain of its sources of supply, and it was anticipated that by the end of March, 1912, the work in connection therewith would be completed, and there would thereafter be no occasion to limit the ordinary requirements of the mines, unless the demands of the municipalities further increased. Owing to the continuance of the drought, and the consequent increase in the demands of all its consumers, the Board, in November last, decided on an apportionment under which the mines obtained about 45 per cent. of the available supply, the balance being distributed among the various municipalities, South African Railways, and other consumers on the Rand, thus effecting a reduction altogether of two million gallons per diem during the period of stress.

Mines Sanitation.

The introduction of the water-borne sewerage system in the municipal area of Johannesburg has raised the question of its establishment for the mines whose properties are situated within the municipality. Towards the close of the year the subject was under discussion between a sub-committee of the Chamber and the Public Heatlh Committee of the Town Council, chiefly in regard to the fixing on a satisfactory basis of charge for services. The committee trusts that a settlement will be reached of a satisfactory nature to both parties.

UNION MINERAL OUTPUT IN JANUARY.

Government Statistics—Labour and Accident Returns.

As reported to the Government Mining Engineer's Department, the mineral output of the Union for January was valued at £3,297,994. Gold accounted for £3,087,345, the contributors being: Witwatersrand, £2,695,812; other Transvaal areas, £120,875; other Provinces, £658. The Government returns put the number of gold mines at work at 103, of which 63 were on the Rand, 39 in outside Transvaal areas, and one in Natal. Stamps at work totalled 10,216, of which 9,535 were on the Rand and five in Natal, the remainder being in outside districts of the Transvaal. Tube mills at work numbered 263, of which 248 were employed on the Rand. As compared with December, the stamps at work were fewer by 55, and tube-mills were more by seven.

Development.

Main drives and crosscuts totalled 49,160 feet for the Transvaal, an increase of 3,332 feet on December; main shaft-sinking accomplished totalled 3,908 feet, a decrease of 24 feet; and other development amounted to 24,103 feet, a decrease of 762 feet. Rock hoisted totalled 2,590,333 tons, or just about 100,000 tons more than in December.

Coal Production.

Transvaal coal continues to decline in pit-mouth value, the yield for the month being sold at an average of 4s. 5.54d. per ton, as compared with 4s. 6.76d. per ton in December. Cape collieries obtained 10s. 8.30d. per ton, Free State collieries 5s. 6.52d. per ton; and Natal collieries 5s. 6.06d. per ton. Details were as under :—

	Tons. sold.	Value. £	Per ton. s.	d.
Springs	52,345	14,171	5	4.97
Middelburg	279,872	60,992	4	4.30
Other areas	34,902	6,740	3	10.35
Transvaal...	367,119	81,903	4	5.54
Cape	4,884	2,611	10	8.30
Orange Free State... ...	43,221	11,980	5	6.52
Natal	220,001	60,557	5	6.06
Union	635,225	157,051		4.95

Mineral Output.

The mineral production of the past three months compares as follows :—

	Nov. £	Dec. £	Jan. £
	Gold.		
Rand Area	2,936,564	2,891,239	2,965,812
Other districts	125,073	121,034	120,875
Transvaal...	3,061,637	3,012,273	3,086,687
Cape	10	11	—
Natal	357	421	658
The Union	3,062,004	3,012,705	3,087,345
	Silver.		
Transvaal	8,461	8,217	8,735
	Coal		
Transvaal	82,543	79,075	81,903
Cape...	3,989	3,613	2,611
Orange Free State	11,929	11,135	11,980
Natal...	62,816	56,732	60,557
The Union	161,277	150,555	157,051
	Copper.		
Transvaal	—	—	4,453
Cape	13.445	64,665	—
The Union	13,445	64,665	4,453
	Tin.		
Transvaal	27,772	18,549	26,682
Cape...	186	277	—
The Union	27,958	18,826	26,682

The Labour Force—Transvaal Gold Mines.

The following table gives the average number of men and drills employed on Transvaal gold mines since January, 1911 :—

	Whites.	Coloured.	Rock Drills.
1911—			
January	25,568	195,225	3,851
February	25,880	201,960	4.062
March	25,925	207,903	4,044
April	25,979	211,135	4,057
May	26,111	209,913	4.201
June	25,960	206,197	4.286
July	25,780	201,485	4,329
August	25,632	197,332	4,412
September	25,431	196,421	4,417
October	25,329	196,019	4,589
November	25,151	195,019	4,653
December	25,108	194,286	4,671
1912—			
Jannary...	25,224	198,595	4,791

Accidents.

From the table of accidents in the Transvaal the following extracts for the months since January, 1911, are reproduced :—

	Killed. White.	Coloured.		Injured. White.	Coloured.
1911—					
January	15	91	......	34	141
February...	7	59	......	29	112
March	15	83	......	31	130
April.	7	67	......	26	119
May...	8	80	......	35	113
June..	8	55	......	36	150
July..	6	65	......	27	127
Angust..	11	84	......	21	138
September...	5	61	......	27	137
October	7	73	......	37	122
November...	10	69	......	31	144
December...	4	62	......	26	101
1912—					
January.	5	62	......	67	35

Zululand Mining.

There is very little to report in the way of mining, says the Zululand correspondent of the *Natal Mercury*. No new finds are announced, and prospecting is proceeding slow but surely. The activity on the Vira Mines property, where a Lane mill is being erected, has doubtless caused the holders of claims in the Melmoth district to devote more attention to their holdings, and some desultory prospecting is noticeable on the Bob Watkins reef, held by Messrs. Bang and Knox, on the farm Konisberg, on the claims held by Mr. A. W. Symmonds, as also on the farm Carfield. The formation exposed on the latter farm is held to be identical with the Vira formation, the gold-bearing schists being very similar to the belt now being developed on the latter mine. Those, however, who have acquired claims on the farm Oakdale (a Durban syndicate) maintain that they have the true Vira extension at Vungweni. Quite a large tract of country has been pegged recently on behalf of some Durban speculators.

TRADE AND INDUSTRIES COMMISSION'S REPORT.

Majority Demand Increased Protection Disguised Behind Many Platitudes— Consumers Threatened With Higher Cost of Living—Minority Reports Provide Sane and Effective Counterblasts.

The report of the Commission appointed to inquire into the conditions of trade and industries, tabled in the House of Assembly this week, is a publication of one hundred and forty-nine pages. The Commission comprised Sir Thomas Cullinan, chairman; Messrs. William Macintosh, W. A. Martin, Joseph Mossop, C. G. Smith, Dr. Viljoen, C. H. Wessels, and J. G. Maydon. The majority report is signed by Sir T. Cullinan and Messrs. Viljoen, Wessels, Mossop, and Smith; while Messrs. Martin and Macintosh each submit minority reports.

Majority Report.

From the majority report, it appears that the Commission sat at Capetown, Johannesburg, Pretoria, Bloemfontein, Port Elizabeth, East London, Durban, and Maritzburg, and in all three hundred and five witnesses appeared. The Commission also made a point of visiting as many factories and industrial undertakings as it conveniently could. The Commissioners stated that they were considerably handicapped by the absence of statistics relating to the production of the industries, the values of material consumed, the cost of labour, etc.

General Policy.

Under the heading "The Policy Recommended," the Commissioners consider that it is in the best interests of the country as a whole that adequate protection should be given to agriculture and industrial undertakings, adding that they found their recommendations on economic and national conditions. The Commission, is, however, not satisfied that an adequate measure of protection is the sole panacea for the troubles of industries in this country, the chief drawback being lack of capital, which will not be available until the country has determined on a permanent fiscal policy. Others may be said to be due to industrial handicaps. On the other hand, certain industries are in a state of industrial inefficiency. The former class, for instance, are not able to make use of by-products, and the latter class has not developed them. In other cases the manufacturers appear to have failed in marketing their wares, and they consider the fault to be that the distributor is unsympathetic. The Commission is glad to say that the prejudice against the use of South African-made articles is disappearing. It declines to recommend prohibitive rates of duty, on the ground that excessive protection would lead to ineffiency and eventual decay. The Commission has only taken into account three factors which it considers essential before any industry can be recommended for favourable consideration: (1) That a fair proportion of raw material used is, or can be, obtained in the country; (2) That a fair percentage of white labour is employed; and (3) That there is a reasonable chance of the industry becoming established. Various recommendations are made under the head of "miscellaneous." The Commission is opposed to a sur-tax on articles imported through the parcels post, and advocates a reduction in the parcels post rate in the Union. The Commissioners, in emphasising the essential points of their recommendations, specially dwell on the importance of protection, continuity of policy, the establishment of an iron and steel industry, and a spirit of endeavour and a belief in the great destiny of the country.

Minority Reports.

Mr. Martin, in a minority report of thirty-seven pages, states that his grounds of dissent from the majority report are fundamental. Owing to the complete absence of any statistics of trade and industries excepting such as are contained in the Customs and railway records, it was quite impossible, he says, to form any definite conclusions on many of the points regarding which the Commission was instructed to inquire. As regards agriculture, he adduces evidence to show that the prices for agricultural produce sold locally are governed by the world's market prices, as, for instance, butter. He further agues that the farming industry likewise will be hampered by the extra cost of materials. He is satisfied that the result of protection will be able to provide work chiefly for natives and coloured men, and contends that a protective tariff in South Africa is detrimental to every interest except that of the manufacturers. Mr. Macintosh, in his minority report, states that he agreed with many points of the majority report, but disagreed on certain fundamentals. For instance, he believes that one of the chief causes of the high cost of living is the high Customs tariff on the everyday requirements of life. He therefore does not agree with a policy of involving an increase in cost to the consumer, which he estimates at about a million sterling. He urges that nothing should be done to discourage mining. As to farming, a great area of the country is probably always to be devoted to stock raising. He differs from the majority in regard to preferential railway rates, and agrees with the Congress of the Associated Chambers of Commerce in favour of abolishing such rates, "except for export purposes and for raw produce of the soil." An increase of duties as an equivalent for abolition of preferential rates would, in his opinion, impose increased taxation and cost of living on all consumers.

Profits Tax Assessments.

In connection with the mining profits tax, the Auditor-General of the Union, in his annual report, says he felt he ought to scrutinise the assessments made in the Inland Revenue Department. "This course," he reports, "seemed necessary in view of the fact that the assessments would not otherwise have come under the independent audit. Several cases in which I have been unable to concur in the assessment arrived at have since arisen and have formed the subject of correspondence between the Commissioner and myself; but upon studying the Act in practice, I have been compelled to come to the conclusion that I am not empowered to enforce my opinions in this respect, even to the extent of requiring uniformity in practice, and that the amount of the assessment as passed by the Commissioner must be finally accepted as the amount legally due to revenue." Lengthy correspondence ensued, the London advisers ruling that "where the Commissioner has exercised a discretion in a matter with regard to which, owing to differences in the method of rapidity of development of the mines of different companies there is room for some latitude or divergence of opinion, his decision, even if apparently not consistent with other decisions, must be accepted, for he is not bound to be guided by any rigid or inflexible rule." But at the same time the Auditor was not satisfied, for he concluded by remarking: "Whether the position is satisfactory is, I submit, a matter for grave consideration, seeing that the revenue involved amounts to about £1,500,000 per annum."

MINE ACCIDENTS ON THE RAND.

Some Further Views—Inefficient Miners—Too Frequent Changes of Managers and Labour Force.

In addition to Mr. R. N. Kotze's paper on mine accidents, reprinted in our last issue, the following contributions were made on the subject at the last meeting of the Chemical, Mining and Metallurgical Society:—Mr. Cullen said: Looking at the mines as a whole, and lumping blacks with whites, he estimated that the average period of employment must be under one year. He knew of no other industry which could stand this. From figures supplied by the Government Mining Engineer he found that there were approximately 100 mine managers on the Rand, and that in 1909 there were 97 changes, in 1910 91 changes, and last year 80. These figures, said Mr. Cullen, speak for themselves.

Mr. Coombe's Opinions.

Mr. M. H. Coombe, manager of the State Mines, said: "Speeding up" in some of our mines is an admitted practice, and certainly tends to accidents. The fault here does not lie so much with the management as with the policy that erects big mills and drops the stamps before sufficient development has been achieved to keep the mine ahead of the mill. Every ounce of rock is wanted, waste as well as reef. Pillars can ill be spared. Timber is expensive, and the underground boss, at his wits' end to do forty things at once, chances himself and his mine to luck, and hopes to get ahead of the mill or die. This, of course, is not mining. In fact, mining is becoming a lost art on the Rand. It is simply "gouging" out everything to feed a monster that is not, and cannot be, satisfied. Smaller mills, more clean reef mining, less waste hoisting, and more left in the stopes; more pillars and filling will conduce to more economical work, better dividends, and fewer accidents. I will venture the opinion, based on close observance, that not more than 15 per cent. of the underground men in our mines to-day are miners. There are other things that count to the self-respecting miner besides a big cheque. The conditions of work and service in our mines are not attractive; nay, they are most repulsive to the man who knows his work as a miner. Our Government would be wise to follow in the footsteps of England and America, and appoint a number of miners as underground inspectors. More inspectors are certainly wanted.

Mr. T. Johnson's Contribution.

Mr. Tom Johnson drew attention to the fact that the death rate for the last four years was lower than that for the preceding five years. There was also, he said, an apparent increase of accidents owing to the more conscientious carrying out of the rule requiring non-fatal accidents to be reported. Then again, an enormous number of raw natives had passed through the mines during recent years, the industry having built up its coloured force at the rate of 22,000 per year. Was it any wonder, he inquired, that the accident rate was high with the class of supervision which prevailed on the Rand?

The Pneumatogen Rescue Appliance.

INTERESTING DEMONSTRATION AT THE MINING EXHIBITION—A LECTURE ON RESCUE APPLIANCES.

Certainly one of the most interesting features of the Mining Exhibition has been the demonstration of the "Pneumatogen" (1911) Self-Generating Rescue Appliance, given by Mr. J. Curthew Sanders, of the staff of Messrs. Reunert and Lenz, the agents for the apparatus. Mr. Sanders preceded his demonstration of the appliance by giving a short lecture on the use of rescue appliances in general, followed by a brief history of their development. In the course of his remarks he said: There are occasions when gas becomes prevalent in gold mines, or in coal mines where sometimes explosions of fire damp take place. Men working in the vicinity at the time are overcome by the fumes, which renders them insensible. If brought to the surface in time, and placed under skilful medical treatment, these gassed men are likely to pull through. If unable to reach the surface certain death is the result. Rescue appliances are designed to give the wearer a plentiful supply of oxygen and at the same time prevent any mine gas from entering his respiratory organs. Then a man with this equipment may enter the worst places and bring to the surface the body of any victim. Rescue appliances, to be of any use at all, must fulfil the following conditions: (a) They must be capable of giving a sufficient supply of oxygen to the wearer; (b) they must be so constructed that one has perfect liberty and freedom of action, for above all the wearer must not be hampered in any way; (c) they must be as light in weight as possible, as rescue work may require a great amount of work in a moist and heated atmosphere; (d) they must be perfectly simple in construction, so as to be easily understood. First of all, so far back as about 1860 Professor Schwann, of Liege University, invented an apparatus to absorb the poisonous gas, $CO2$, which is given off with the exhaled breath. Also, H. A. Fleurs brought out a similar apparatus at about the same time. Neither of these was put into practical use, and the inventions died a natural death. In May, 1895, at Karwin, in Silesia, owing to the carelessness of a fuse firer in one of the coal mines, a quantity of dynamite exploded, creating great damage and killing several workmen. A much greater number, in rushing to a place of safety, were overcome by the fumes, and perished. Altogether fifty-three lives were lost. This mine belonged to R. W. von Uysdal. He thoroughly investigated the matter, and found in this case, as in others, that fully 90 per cent. of the victims died from the effect of the fumes. On the spot he was convinced that if each man had had a vessel containing oxygen—which would have to be compressed, so as to last longer—in order that he could pass safely through the poisonous fumes, the death-roll of this disaster could have been reduced by at least 45 men. Von Uysdal sought the service of Dr. Gaertner, the well-known scientist, and the matter was carefully studied. The result was the first rescue apparatus of the compressed oxygen type. This consisted of a bag made of rubber cloth, in which was placed a steel reservoir holding compressed oxygen, and a glass bottle containing a solution of soda. When in use the glass bottle was broken, setting free the soda. The oxygen was breathed in and the exhaled breath passed over the soda, which absorbed the $CO2$. This apparatus has been improved on till we have the present various types of compressed oxygen apparatus. However, one great drawback to this type is the fact that on several occasions the compressed oxygen cylinders have exploded, with serious consequences. Further, this type of apparatus is weighty. With a view to remedying these two drawbacks, Professor Dr. Bamberger and Dr. Bock, of the Vienna University, acting on the theory that certain chemicals under certain conditions should give off oxygen in perfect safety, sought means of generating oxygen for breathing purposes by filtering the breath through dry granulated peroxide. The theory is perfectly sound, but it took years of experimenting to put the theory into simple, practical form, so simple as to be easily understood by the most uneducated. The many years of experimenting were rewarded with complete success only so recently as March of last year, when the apparatus was produced in its present form as you see it now. The oxygen given off is cool and just sufficiently moist, and there is a total absence of any greasy taste, which is so noticeable with compressed oxygen. At this stage Mr. Sanders invested his assistant, with the aparatus, and pointed out its advantages. The simplicity of the whole appliance was at once apparent. "The points which I particularly wish to impress upon you are these," said the lecturer. "First of all the whole apparatus only weighs 22lbs., that is, a little heavier than an ordinary cloth overcoat. Next, its compactness is such that an average man can crawl through an aperture eighteen inches square. There are no valves nor injectors to get out of order at, perhaps, a critical time. There are only four joints, so that liability of leakage is small. The apparatus is always ready, and it cannot possibly deteriorate in any way. Its efficiency is superior to any other type. It will give off sufficient oxygen for from two to three hours, with heavy work, and from three to five hours with light work." The assistant wearing the apparatus moved about among the large attendance, and attracted great interest. Mr. Sanders very clearly explained the chemical action going on while the apparatus was in use, explicitly showing that the potassium-sodium-peroxide, being attacked first by the moisture from the exhaled breath and then by the carbon-dioxide, gave off oxygen, and left as a residue the double salt potassium-sodium-carbonate. A complete description of the apparatus appeared in our last Saturday's issue. The lecture and demonstration has created such great interest that Mr. Sanders has been asked to repeat it this (Saturday) afternoon and evening, which he has consented to do at 4 p.m. and 8 p.m., at the Mining Exhibition.

PROGRESS IN CYANIDATION OF GOLD AND SILVER ORES DURING 1911.—IV.

An Interesting Summary of Metallurgical Advance—New Mills and New Processes—South Africa Well to the Front.

[By Alfred James.]

The following extracts have been taken from Mr. Alfred James' contribution to the *Mining and Scientific Press Annual*:—

Fine Grinding.—E. S. Ball, in a paper before the Institution of Mining and Metallurgy, shows that present African practice is to grind 130 tons of product passing 90-mesh screen for 75 to 90 h.p. with a pebble load of 8 to 14 tons, depending on the wear of the liner. This gives a factor for comparison with the data of El Oro, Waihi, and other fields previously given in these reviews. A standard mill in South Africa consumes 7 h.p. per ton of pebbles and produces 10 tons of ground sand per ton of pebble charge per diem, or, roughly, 1½ tons per horse-power through 90 mesh. El Oro produced 1.2 tons per horse-power through 200 mesh. Waihi figures are greater than these, but include the slimed ore from the mill. The best feed appears to be 30 tons per ton of pebble load at a moisture of 38.8% (Walter Neal). The pebble load is shown by Mr. Ball to be the best when the mill is filled to just below the centre of rotation, while the speed of rotation should be 10% greater than that given by Davidsen's formula. Now Ball's tests were so successful that he brought the efficiency of a makeshift tube-mill—an old chlorination barrel—from 3.87 (S.8) to 8.82 (V) and gave results comparable with those from present day specially-designed mills. It is to be hoped ere long similar tests may be made on the economical limits of coarseness of feed and of irregularity of mine rock (substituted for pebbles). There is but little fresh to chronicle in tube-mill practice. As previously suggested, Walter Neal's reverse screw outlet is becoming more and more widely used, and bar liners are displacing all other forms. The ideal liner would seem to be an El Oro liner with replaceable ribs or bars, so that the backing need not be wasted when relining is necessary. Richards (Cornwall) points out the necessity of having small pebbles as well as large in the charge of tube-mills newly started. After continued running, the necessary proportion of small pebbles is mechanically produced, but at the outset he finds output poor unless the charge is made up as stated above. Allen's point of rounding off mine rock prior to its introduction into the mill appears well taken, and is supported by the work of Davidsen and the experience of Neal. The original ten machines at the Great Boulder have treated a million tons of slime to date—a pretty good record. The latest type of machine, however, has adjustable periods of revolution enabling the cycle to be altered at will or even with the age (and lessening filtering capacity) of the cloths. It works automatically, the adjustment being by water-balance, with feed varied at desire, and is showing a good capacity even with the difficult St. George kaolin. On Great Boulder pulp this latest Ridgway type handles daily over 250 tons per unit.

Filtration.—The fact that all the new great mills of the world referred to under 'New Mills' treat their slime by filtration, evidences how absolutely this method has displaced decantation. From West Scotland Street to Karangahake, from Karangahake to Kalgoorlie, from Kalgoorlie to the uttermost parts of the earth, filtration has progressed on its triumphant march; except for the Rand, where the new Consolidated Langlaagte mill is reported to be designed for decantation, it may be regarded as universal. It is noteworthy that all the typical new mill plants noted, except the Brakpan, have pressure-filters in spite of the great advances made in vacuum-filters, mainly on the lines indicated by Crush in 1909, namely, the adoption of gravity-filled huge pipe-line plants emptying or filling in three minutes and thus avoiding or lessening cracks, in place of the centrifugal-pump-throttled slow-filling systems described in the technical press of that date.

Pressure-Filters.—The Dehne still easily ranks first for number of installations, and is the press adopted by such new mills of the year as the Lonely Reef and the Matabele Queen. The Merrill has given a remarkably good account of itself at the Santa Gertrudis, and the Kelly has been adopted for the treatment of concentrate at the Goldfield Consolidated and the Alaska Treadwell new mills.

Vacuum-Filters.—A spell of holy calm has supervened after the enthusiasm of past years. The Moore is reported to have been adopted for a further plant at Pachuca by an old friend there. The submerged filter has undoubtedly advanced since the adoption of the principle of rapid emptying and filling. Charles Butters has been energetically moving in new territory, Africa and India, and the official report of the Crown Reef plant may be regarded as a veritable triumph. Years ago the Denny brothers pointed out the loss in dissolved gold in the decantation residues and their accompanying solution. It was reported that the total maximum further possible saving was only 8d. It seemed impossible to break down this stand and to save gold for people who thus plainly expressed their belief it was not there to save. Even the Ridgway demonstration, which reduced decantation residues from 0.5 and 0.6 dwt. to 0.12 dwt., failed to shake this attitude, and when the same demonstration showed indubitably that gold was still being dissolved after the pulp had been agitated and treated by decantation, even then the possibility of this was locally denied. The official report on the working of the Butters plant at the Crown Reef should put an end to all this. The true average of Adair-Usher residue is shown to be 0.423 dwt. instead of the 0.225 dwt. stated. The Butters plant recovers the dissolved gold, and also by the use of barren solution wash further gold, to the extent of 0.332 dwt., 1s. 5d. per ton, and may under normal conditions be reasonably expected to show a gross saving over decantation of 0.20 dwt. (10d.), or a net saving of 0.12 (6d.) per ton of slime filtered with a treatment cost of 9d. per ton filtered. It may be reasonably anticipated that under normal conditions the Butters cost will not amount to anything like this figure. Under demonstration conditions extra cost will have naturally been incurred to bring the figure above normal. It will be remembered that the fixed submerged costs were given as from 6d. to 10d. per ton in this review for 1909, and with the huge-main gravity-filling system now being adopted at all plants, it may be expected that costs will be still further reduced. The following cycle is given for comparison with the old ones published in 'Recent Cyanide Practice.' It well shows the advantage of the gravity-filling huge pipe-line plant to which an old pump-filling plant was converted, and is only possible, of course, by the hydraulically operated valves first included in the rapid-filling Crush installations. By use of 20-in. pipe-lines the cycle is completed in one hour, as follows, the time being stated in minutes: Fill, 3; form cake, 19; discharge pulp, 3; fill, wash, discharge with barren solution, 21; water-wash and cake discharge, 11; total, 57. This may be compared with a cycle of 2 hr. 5 min. by the old pump-throttling system. By the new method, not only a better washed product is obtained by avoiding the formation of cracks by long exposure of the uncovered cake, but also the unparallel output of 7 dry metric tons per leaf per 24 hr. is achieved. The industry is indebted to C. W. Van Law, of Real del Monte, not only for the record established for the above work, but for much serious original investigation into the question of the continuous solubility of gold and silver in pulp after agitation, and even after filtration. Mr. Van Law establishes the necessity for dilution with barren solution after agitation, and for slight re-agitation to obtain best results. An extract from a letter dealing with one of the largest and most recent submerged-filter plants of the day gives point to the remarks above regarding the evils of throttling and the advantage of the Van Law cycle. "The bad feature of it is that the excessive time of change from slime to wash is worse than wasted, for it allows the cakes to crack. When giving a water-wash the time lost in manipulation, exclusive of discharging the cakes, is 36 minutes on each cycle. Allowing an hour and a half per cycle, that shows a 20% loss of capacity as compared with changing in six minutes."

J. W. Hutchinson's articles on the mill at Goldfield* have already been the cause of the saving of many thousands of dollars by submerged-filter operators. He most carefully prevents unavoidable loss of the water-wash into which his cakes are discharged, pumps off all possible water to a storage tank, and uses it for diluting his Pachuca charges. Any enrichment of the solution is thus retained in the mill-flow for ultimate precipitation. His slime residue flows to the dam as a very thick pulp, carrying little more than 33% moisture. Whether this method is an improvement on that of A. H. Smith, also at Goldfield, described in this review of 1909, is perhaps a moot point. Mr. Smith runs his residues into a pond with wash solution, settles, and decants, and to this extent may recover a larger proportion of value contained in the cake than Mr. Hutchinson, who decants from his tank; on the other hand, Mr. Hutchinson's method should be less costly and less liable to loss. But it would look as though he could make a higher recovery by following the example of Mr. Smith and decanting after the cake has been agitated with wash instead of after a dropping only. The Ridgway has not been entirely resting on its laurels. From New South Wales comes the account of its having ousted a grouped-frame filter of well-known type, and a plant has also gone into British Columbia. But in Africa its sponsors, having demonstrated its efficiency, have preferred to wait for a coming to terms by the mining groups rather than to undertake further expense for a problematical minute remuneration. The Thompson-Davis-Crush plants have this year introduced a further refinement by a contrivance which avoids the use of air (with its inconvenience of frothing) for agitation. Drage has brought out a filter in Australia which somewhat resembles a Ridgway set vertically. The Way-Arbuckle combination appears to have been long endeavouring to patent a somewhat similar appliance with double screen-area, judging from U. S. Patent Specifications issued June 6, 1911.

Heating Solution.—Year by year I refer to this in the hope that it may lead to a general communication of views as to the benefits or disadvantages of this course. The difficulty of precipitating gold from solution on the Rand in the winter months emphasises the necessity for some such exchange of experience. The method suggested by Swen of reheating the air employed in air-lift agitators seems a simple and feasible plan of warming solutions and at the same time making less air necessary for a given duty. C. T. Rice* refers to an increased recovery of 2 per cent. at the Desert mill resulting from heating the solution.

Precipitation.—The Merrill zinc-dust method has been gaining ground as a result of the careful technical supervision of the inventor and his associates. This method has been still further improved by the adoption of a two-circuit plan, the main circuit for reducing solution content during flow, and the secondary circuit for the complete precipitation of solution to be used as wash, etc. By the adoption of this system the consumption of zinc-dust has been reduced to 1 : 1 of bullion; indeed, even a lower consumption is claimed at some plants. The system has also shown to advantage in the precipitation of cupriferous solutions. The continuous feed of zinc-dust acting at once, instead of becoming more sluggish after a while, as with copper-coated zinc shaving, has given remarkably good results in dealing with such solutions, as witness the Goldfield Consolidated plant when the precipitate contains 43 per cent. copper. Undoubtedly, a drawback to the system is the large amount of oxide and impurities, perhaps 15 per cent., added to the precipitate, all of which has to be fluxed off unless resort is made to acid treatment. Another drawback is undoubtedly the clogging up of the pipe system between the feed and the press with bullion precipitate—this latter difficulty should be easily overcome, and I am expecting Mr. Merrill to make his hold on the process greater than ever by supplying a specially prepared pure zinc-dust.

General.—Silver mills seem to have bulked more largely this year in the matter of advanced practice than gold mills; silver sulphide is not so easily attacked by cyanide solution as metallic gold, and this fact probably accounts for the advanced position in practice held by Mexico and for the extraordinary high efficiency in gold recovery of the mills there. The keen enthusiastic emulation of the Santa Gertrudis, Real del Monte, San Raphael, La Blanca, El Oro, Esperanza, and Dos Estrellas mills reminds one of the similar position in Kalgoorlie some years back, and cannot but make for great technical progress.

**Mining and Scientific Press,* loc. cit.

* "Eng. and Min. Jour.," June 17, 1911.

Modderfontein B.

The directors' quarterly report for the three months ended the 31st of December, 1911, states :—

Mine.—Development work—Number of feet driven, sunk and risen, exclusive of stopes, 75 feet. The reef disclosures were as follows : Main Reef, footage on reef 27, width of reef 12 inches, reef value 24.7 dwts., 296 inch dwts. Stoping—Tonnage stoped, including ore obtained from developing faces, 86,568 tons. Ore Treatment (for the period 28th of September, 1911, to the 31st of October, 1911), during which the mill and plant worked intermittently in order to test the machinery and plant. 80 stamps and 5 tube mills ran intermittently. Ore milled, 16,335 tons; yield, 6,349 ozs. fine; yield per ton milled, 7.77 dwts.; value of yield, £26,630 : working costs, including 1s. 3d. per ton development redemption, £22,713; working costs per ton milled, 27s. 9.7d. For the months of November and December, 1911.—Milling—Percentage of waste sorted out, 10.5 per cent.; number of stamps in operation, 80; average running time, 57 days; ore milled, 61,625 tons; milling duty per stamp per 24 hours, 13.5 tons; yield, 12,083 ozs. fine; yield per ton milled, 3.92 dwts. fine. Cyaniding—Tons treated, 59,360; yield, 12,486 ozs. fine; yield per ton treated, 4.21 dwts. fine. Summary of Ore Treatment (for the period 28th September, 1911, to 31st December, 1911), (on basis of tonnage milled)—Milling, total yield, 15,178 ozs, fine, 3.89 dwts. fine per ton; cyaniding, 15,740 ozs. fine, 4.04 dwts. fine per ton : total yield, 30,918 ozs. fine, 7.93 dwts. fine per ton. Working Expenditure and Revenue. (for the period 28th September, 1911, to 31st December, 1911).—Mining expenses—Mining, £43,718 13s. 10d., cost per ton milled, 11s. 2d., development redemption, £5,410 10s., cost per ton milled, 1s. 5d.; total cost, £49,129 3s. 10d.; reduction expenses, £21,692 5s. 5d., cost per ton milled, 5s. 7d.; general expenses—mine, £6,390 17s. 10d., cost per ton milled, 1s. 8d.: head office, £2,256 11s. 8d., cost per ton milled, 7d.; total cost, £79,468 18s. 8d., cost per ton milled, £1 0s. 5d.; renewals fund, £1,540 12s. 6d., cost per ton milled, 4d.; total cost, £81,009 11s. 3d., cost per ton milled, £1 0s. 9d.; working profit, £48,809 0s. 11d., cost per ton milled, 12s. 7d. Revenue, £129,818 12s. 2d., cost per ton milled £1 13s. 4d. Net expenditure (after deducting freehold revenue, etc.), £891 1s. 1d.; net profit, £47,917 19s. 10d.; total, £48,809 0s. 11d. Other Expenditure.—Capital expenditure for quarter, £48,264 14s. 3d.; tax on profits due to Government for quarter, £5,800; total, £54,064 14s. 3d. Reserve Gold.—At 31st December, 1911, the company had 3,709 ozs. of fine gold in reserve. The Board has decided to create a fund to provide for extraordinary expenditure on renewal of plant, apart from current maintenance and renewals, by debiting working costs as from 1st November with 6d. per ton milled. The fund will only be operated upon with the sanction of the Board of Directors. The third annual meeting of shareholders will be held in the board room, the Corner House, Johannesburg, on Friday, 22nd March, 1912, at 11 a.m. It will be proposed at this meeting to adjourn until 4th June, 1912, at 3 p.m., in order to give shareholders ample opportunity of perusing and considering the reports and accounts, which it is anticipated will be in the hands of shareholders about the 6th April, before decided as to the disposal of their proxies. A special circular dealing with this subject has been addressed to shareholders. There was a net cash liability at 31st December, 1911, of £110,891 2s.

Rhodesian Section.

LATEST MINING NEWS.

The Eldorado Rumours and a Report—Rhodesia Esperanza—Lonely Reef Developments—Chicago Gaika Acquisitions—The Owl Mine—A New Company—Native Labour—Umtali News.

The Eldorado mine has been the subject of many adverse rumours of late, and general satisfaction is expressed at the action of the directors in despatching Mr. H. A. Piper, who is about to take over the duties of head consulting engineer to the Eldorado Banket Company, to report on the mine. Mr. H. E. Jones, it may be recalled, has already inspected the property, and he concluded his cabled report with the statement that the condition of the mine is quite satisfactory. There seems, however, to be a haunting fear that things are not as they should be, and special interest will attach itself to Mr. Piper's views. Pending the publication of these, attention may be directed to the report for the quarter ending December 31st last. According to this the profit for the three months may be estimated at £31,066.

The report further states that the accumulated tailings on hand at December 31 will yield, it is estimated, a further profit of about £2,000. The estimated balance of net profit (including the estimated profit on accumulated tailings), after deduction of the interim dividends, and subject to the customary depreciation allowances, amounted at December 31 to approximately £23,400. The following is a schedule of the lengths and values of pay rock on the different levels at December 31 last:—

Level.	Length of pay rock.	Value of pay rock as exposed in drive, after reduction of high values to 100 dwts.	Width Exposed.
*1	930ft.	12·02 dwts.	5ft. 3in.
*2	1,025ft.	18·68 dwts.	5ft. 5in.
*3	955ft.	14·50 dwts.	5ft. 10in.
*4	912ft.	18·21 dwts.	6ft. 0in.
*5	1,073ft.	1 oz. 3·12 dwts.	6ft. 0in.
†6	940ft.	15·00 dwts.	6ft. 0in.
7	790ft.	16·00 dwts.	6ft. 0in.
8	155ft.	2 oz. 00·64 dwts.	6ft. 0in.

(Driving is still in progress on the 6th, 7th, and 8th levels.)

* Partially stoped out.
† A small tonnage has been stoped from this Level.

Work during the quarter ended December 31 has been mainly concentrated on the further opening up of the eighth level, crosscutting to the reef at the ninth level and the continued sinking of the main shaft. At the eighth level pay-rock on the parallel reef was encountered at a point distant 525ft. east of the main shaft, where along a distance of 40ft. it had an average assay value of 8 dwts. 8 grs. per ton over a width of 6ft. The fault or dyke previously met with in the higher levels then intruded but, as was announced by the company's circular of January 9th, 1912, the fault has now been passed through, and pay-rock of a value of 8 dwts. across a width of 6ft. encountered. At the ninth level the crosscut from the main shaft intersected the parallel reef at a point 121ft. east of the shaft, where it had a value of 7½ dwts. per ton over 4ft. 1in. Driving east and west disclosed disturbed ground, and crosscutting, for the location of values, is now in progress. The main incline shaft had a depth, at December 31 last, of 1,216ft.—some 30ft. below the ninth level. The new main vertical shaft, from which the development of the mine below the ninth level will be carried on, had, at December 31, a depth of 680ft.

* * * *

The secretary of Rhodesia Esperanza, Limited, has issued the following circular to the shareholders: "In the directors' report and in the chairman's speech at the general meeting on December 15th, 1911, it was stated that as soon as Mr. Ackermann's report was received his conclusions would be communicated to the shareholders. I am now instructed by the board to inform you that they regret that his conclusions fully confirm the unfavourable statements already received from our own consulting engineer, and that Mr. Ackermann states that the Esperanza mine does not justify any further expenditure. The board are taking steps to ascertain whether it will be advisable to retain the New Discovery claims, in case further investigations should disclose indications which would warrant the restarting of exploratory work, should a suitable opportunity arise. It will be remembered that all the samples taken from these claims showed gold. It is not intended, however, to retain the claims unless it can be done at quite a nominal cost. The board further desires to say that they have under consideration an offer to participate in what appears to be a very promising mining property, which, after careful investigation, has been strongly recommended by Mr. Ackermann, the resident mining engineer of the British South Africa Company. The terms offered will give the company a substantial interest in the property, proportionate to our remaining resources. The shareholders will be informed in due course should this proposition result in a definite arrangement. In the meantime current expenses have been reduced to a minimum."

* * * *

The following are cabled results of development work carried out in the Lonely Mine since last advices:—No. 6 level south drive: driven 20 feet, average width of reef 30 inches, average assay value 19 dwts. 12 grs. No. 7 level south drive: driven 90 feet, average width of reef 53 inches, average assay value 14 dwts. Winze No. 1 (from No. 7 level): sunk 20 feet, reef 46 inches wide, assaying 1 oz. 16 dwts., not all exposed; winze now sampled to depth of 60 feet, average width 43 inches, average assay value 2 ozs. 5 dwts., not all exposed. Prospects exceedingly bright.

* * * *

The Chicago Gaika Company has acquired a 25 per cent. interest in the Connemara and Renmore (96 claims), and an option to acquire a similar interest in an option on the Cork (90 claims), situate near the Hunters Road siding in the Gwelo district. The property contains banded ironstone ore bodies of great width and extent and of considerable promise. Development is now proceeding with encouraging results. The company has also acquired a 15 per cent. interest, with a call of a further 10 per cent., in an option on the Cactus (120 claims), situated some nine miles from the Globe and Phœnix mine in the Gwelo district, upon which the development work now progressing is of a satisfactory character. The company has further acquired a 34 per cent. interest in an option on a new discovery of tin in the Victoria district (14 blocks of claims, the equivalent of 420 gold claims, or an area of 920 acres). Very rich float tin has been found on this property, and development work is proceeding with a view to locating a main lode.

* * * *

Amongst Rhodesian mines which crushed ore for the first time last year, and secured good results, mention may be made of the Owl Mine, situated on the north bank of the Umswezwe River, six or seven miles east of the railway siding, and tributed from the R. E. and D. Co. by Messrs.

Rolfe and Seear. The mine has had a chequered career, nd was first pegged by a small syndicate which appears to ave done very little work, and which soon went into liqui- ation. The property was then sold by auction, and was nocked down to the present owners, so it is said, for some uch trivial sum as five pounds. After lying fallow for a onsiderable time, the owners of a neighbouring property ook it on tribute, but they only crushed a few tons of ubble, and sank a shaft, which, as afterwards appeared, ever bottomed the ancient workings. Another period of eglect ensued, lasting several years, until Messrs. Rolfe nd Seear took up the claims on tribute and proceeded to pen up the old workings in a systematic manner, with ighly satisfactory results, as may be judged from their rushing returns. Although some comparatively poor rubble included, they have produced, from February to Decem- er last year, £25,559 worth of gold with five stamps and a untington mill, and the February output was expected to e about 1,000 ozs., including the clean up.

* * * *

A company has recently been registered in London yled White Labour G.M. Company, Limited. The con- ern has a capital of £10,000, and one of the objects of the ompany is to adopt an agreement with the Rhodesia Gold ining and Investment Company, Limited (incorporated in hodesia). The minimum cash subscription is seven shares. he number of directors is not to be less than two nor more an five. The first are G. R. Lewis and G. E. Duveen. he company was registered by Messrs. Ingle, Holmes, and o., Capel House, E.C.

* * * *

The latest native labour returns issued by the Rhodesia hamber of Mines show that out of 31,038 boys employed on gold mines, 10,798, or over 33 per cent., were employed on non-producing propositions. This is an important fact to bear in mind, and one which establishes the large amount of development work being carried on in several districts, notably in the Hartley and Abercorn areas. Disappointment has been expressed in certain quarters that the gold output is not greater than is actually the case. It is true that the very rosy anticipations of the boom days of 1909 and 1910 have not been altogether justified by actual returns. But at the same time the facts that the output of gold is at least being maintained whilst at the same time one-third of the native labour supply is engaged on nonproductive work are full of encouragement. Ore reserves are being piled up and tonnages actually blocked out and awaiting stoping operations are, after all, what Rhodesia is in chief need of at the present.

* * * *

Latest news from Umtali is to the effect that Mr. Harold Wragg, A.M.I.E.E., of the Penhalonga and Rezende mines, commenced his duties, as Chief Engineer, on the 1st inst. He is in charge of the electrical and mechanical departments and is very busy on works extensions, both in the valley and on the Odzani river. The new Rezende power scheme bids fair to be quite a model plant. The power supply is already remarkably efficient, both as regards low cost and continuity of supply.

* * * *

The Sussex Syndicate (Umtali district) are having good results from the Perthshire ground.

* * * *

There is a report that the Rezende has a good strike running 18 dwts. on the western ground close to where the Imbeza Syndicate are tributing.

Claremont Mines Annual Meeting.

The annual general meeting of the Claremont Mines Rhodesia), Ltd., was held last week in Maritzburg. Mr. . J. O'Brien (chairman) presided. During the period nder review the balance of the authorised capital was called . The financial position of the company at 31st Decem- r last is as follows:—Sundry creditors, being amount of an incurred to provide the necessary funds for the pur- ase of the new reduction plant and for the development the mine, £18,026 3s. 3d.; less sundry debtors, £563 0s. .; amount of company's liability, £12,463 3s. 1d. The ofit and loss account shows the gross earnings of the mpany during the period which the battery was worked have amounted to £10,753 1s. 1d.; less working expenses, cluding head office, directors' remuneration for 1910-11, d interest, amounting to £8,850 4s. 11d.; leaving a profit £1,902 16s. 2d. At the last annual meeting you were otified that it was the intention of the board to erect a odern reduction plant. Your board has now pleasure in ating that this has been accomplished. The new plant, nsisting of 15 ordinary stamps, plus 2 Nissen stamps, each issen stamp being equal to 2½ ordinary stamps, making a tal stamping power equivalent to 20 ordinary stamps, com- enced operations in December last, in order that the anager might proceed with the work in connection with e new reduction plant. Mr. O'Brien, in moving the adop- on of the report, said, *inter alia*:—

> The ore reserves at the close of the year amounted to 47,544 tons, e average value being 7.762 dwts. per ton. In the Nelly section e reef has been struck in the ancient workings. Assays gave re- lts as high as 216 dwts. over a width of 12 inches. Owing to the ortage of native labour the manager has been restricted as to the velopment of this portion of the mine. During the past year the elly five stamps ran 156.70 days, crushing 4,684 tons, and e new reduction plant of 20 stamps ran 20.40 days, crushing 4,684 ns, and the new reduction plant of 20 stamps ran 20.40 days, ushing 1,646 tons. Having regard to the number of days and ton- ge crushed, I think the result of last year's working as shown in e profit and loss account can be regarded as satisfactory. The ncentrates for last year have not been treated. The manager esti- ates the residues at 1.21 dwts. per ton, which should mean a fair ofit being made. The company has a valuable asset by way of ,000 tons of rubble on the surface, which the manager estimates ll produce a profit of about 2s. 6d. per ton. The question of water supply has caused some anxiety, but this difficulty has been satisfactorily overcome, and there need be no further fear in this direction. We have been considerably hampered by the dearth of native labour in common with almost all similar undertakings in Rhodesia, but our numbers are steadily increasing, and the manager is sanguine that our requirements will be secured. There is some two years' supply of ore in sight, and the intention is to work on this and concentrate development efforts in the direction of No. 4 Shaft, where the manager and consulting engineer consider our future lies. This shaft is now 320ft., and is being connected at the third level with the main shaft, which will open up a large amount of what we hope will prove good, payable reef. That we have some good reason for our anticipations from this part of the mine is borne out by the following telegram received recently from the manager:—No. 4 Shaft, 5oz., over 18in.; Drive South, second level, 15oz., over 4in.; Winze North, second level, 10oz., over 10in.

World's Coal Output.

In view of the coal crisis, the following table showing the coal production in short tons, of the principal countries of the world may be of interest. The figures are for 1910, except as indicated:

United States (1911)	490,000,000
Great Britain	296,007,699
Germany	245,043,120
Austria-Hundary (1909)	54,573,188
France	42,516,232
Belgium	26,374,986
Russia and Finland	24,967,095
Japan (1909)	16,505,418
India (1909)	13,294,528
China (1909)	13,227,600
Canada	12,796,512
New South Wales (1909)	7,862,264
Spain (1909)	4,546,713
Transvaal	4,446,477
Natal	2,572,012
New Zealand (1909)	2,140,597
Mexico (1909)	1,432,990
Holland (1909)	1,235,515
Queensland and Victoria	1,119,708
Italy (1909)	611,857
Sweden (1909)	272,056
Cape Colony (1909)	103.519
Tasmania (1909)	93,845
Other countries	5,236,903
Total	1,266,981,434

RHODESIA'S MINERAL OUTPUT.

Details for January—A Decreased Return—Some New Producers.

We have received from the office of the Rhodesia Chamber of Mines (Incorporated) the following detailed statement of the mineral output for the month of January, 1912, with comparisons and values:—

GOLD.

Note.—All the declarations are in fine gold.

MATABELELAND.

Bulawayo District—	No. of Stamps.	Tons Treated.	Yield. Ozs.	Value. £
Agincourt (Est. S. Roodt, deceased) ...	5	326	197.09	828
Alice & Anderson's (Hogg & Barkley)	10	1050	97.11	408
Antenior (E. Granger and Co.)	2	170	60.22	253
Bengali (Arbery & Hicks)	5	374	71.32	300
Do. (tailings)	—	175	19.17	80
Big Ben (W. E. Hunt)	4	230	151.87	638
Bucks Reef G. M., Ltd. (Bucks and Prestwood)	5	670	472.33	1984
Do. (tailings)	—	506	61.10	257
Bulawayo Main A (R. A. Myburgh) (tailings)	—	675	47.80	201
Bushtick Mines, Ltd.	20 2T	3700	243.70	1023
Do. (tailings)	—	1909	361.83	1520
Do. (slimes)	—	1474	167.75	705
"C" (D. & C. Syndicate)	10 1C	1710	132.69	557
Do. (tailings)	—	1293	148.83	625
Do. (slimes)	—	417	155.63	654
Central D.B. (A. D. Gunn) (tailings)	—	200	18.48	78
Claremont Mines (Rhod.), Ltd.	20	2421	858.01	3604
Clean Up (Belingwe G.M. Synd.).. ...	5	210	214.68	902
Eagle A (Peard & McDonald & Co.).	5	248	60.34	253
East Gwanda Mines, Ltd. (Dec.)... ...	—	—	22.13	92
Do. Geelong (W. Hogg)	5	75	31.20	131
Edna (A. V. Botton)	5	41	71.54	300
Ella's (D. Vincent)	5	50	15.04	63
Farvic (Rhodesia, Ltd.)	6 1P	852	347.08	1458
Do. (tailings)	—	575	32.84	138
Do. (slimes)	—	277	60.64	254
Florida tailings (J. Parkhurst)	—	380	13.73	58
Glenmark (A. D. Hall)	5	354	72.54	305
Do. (tailings)	—	450	20.34	85
Imani (F. D. Roscoe) (slags)	—	—	1.91	8
Inani (J. P. McCay) (tailings)	—	200	19.82	83
Indian Savage (J. P. McCay) (tailings)	—	350	34.96	147
Intabanenda (Est. B. Smallie, deceased)	5	248	60.56	254
Do. (tailings)	—	170	12.32	52
Jesmond (W. H. Robinson)...	2	96	25.44	107
Kalydon (Rose Mine Synd.)...	(5)	250	90.79	381
Khami (Cock Bros.)	II	95	11.64	49
Lonely Reef G.M. Co., Ltd.	15 2T	2710	938.51	3942
Do. (slimes)	—	3780	1880.33	7897
Mamba (Rowe & Hendry)	5	60	17.05	72
Matabele No. 3 (R. M. Nairn), clean-up	—	—	67.01	281
Do. (tailings)	—	600	152.45	640
Mohem (D. Henchley) (tailings)	—	500	10.62	45
N'Daba (M. Westerberg)	2	36	14.30	60
Nellally (W. Hogg)	(5)	50	46.81	197
New Eclipse (J. R. Stewart)	4	580	265.11	1113
Do. (tailings)	—	240	44.14	185
Newry (E. V. Campbell) (pannings) ...	—	—	10.04	42
North and Hanover (Hanover G.M. Synd.)	5	235	117.11	492
Northern Star and Kimono (Peel's R. Synd., Ltd.)	10	1502	589.21	2475
Do. (tailings)	—	901	32.20	135
Old Camp (Coleman & Barrett)	5	190	66.91	281
Old Nic (Chart. & Gen. E. & F. Co., Ltd.)	10 2P	1516	626.66	2632
Do. (tailings)	—	1004	85.39	350
Penzance (R. Urquhart)	2	45	16.02	67
Do. (tailings)	—	100	39.37	165
Queen's (Matabele Queen's Co., Ltd.)	10	838	426.28	1790
Do. (tailings)	—	451	82.98	349
Queen's W. Ext. (Cummings & Berry)	3	462	147.48	619
Do. (tailings)	—	432	155.23	652
Riversdale (Bruhus & Schwarz)	4	133	81.40	342
Romola Nigel G.M. Co., Ltd.	5	315	116.58	490
Do. (tailings)	—	312	42.69	179
Rose 2 W. (Derry and Tucker)	5	150	45.75	192
St. David (Forbes Rhod. Synd., Ltd.).	5	200	23.83	100
Tuff Nut (King's Synd.)	5	590	392.29	1646
Do. (tailings)	—	457	86.16	362
Bulawayo District Total			11,104.38	46,627

Gwelo District—	No. of Stamps.	Toos Treated.	Yield. Ozs.	Value £
Ardpatrick (P. S. Warden) clean-up mill	—	—	102.52	431
Arizona No. 2 (A. J. Marchant) ...	5	185	79.16	332
Arizona, No. 2 S. (Williams & Woodger)	2	100	78.27	329
Broad Arrow (Broad Arrow Syn.) ...	10	626	143.75	604
Do. (tailings)	—	425	12.64	53
Bute (T. Pedlow)	5	43	17.91	75
Conqueror (Williams & Woodger) clean-up	—	—	3.91	16
Csardas (Wolfshall Syndicate)...	10	404	284.61	1195
Do. (tailings)	—	268	67.01	281
Don No. 1 (Don Prop. Mines, Ltd.) ...	5	597	140.37	590
Do. (tailings)	—	405	29.67	124
Excelsior 1 W. (Crewe & Cameron)	5	402	47.03	197
Gaika G.M. Co., Ltd.	5 1C	2750	1037.05	4356
Do. (tailings)	—	1445	208.76	877
Gartley (Mrs. A. J. Grant)	2	40	14.94	63
Globe and Phoenix G.M. Co., Ltd....	40 10P	5261	8615.35	36185
Do. (concentrates)	—	233	636.88	2675
Do. (slimes)	—	2332	397.92	1671
Guinea Fowl (Sadler & Holloway) ...	5	400	43.78	184
Do. (tailings)	—	250	7.12	30
Murray (T. Fischer) (tailings)	—	420	18.11	76
New Dunraven G.M. Ltd.	5	575	128.78	541
N'Kanya (Mrs. R. F. O. Dollar)	3	20	7.70	32
North Bonsor (Cornish Syndicate) ...	15	415	99.26	417
Do. (tailings)...	—	490	22.17	93
Pannings (J. T. Hodgson)	—	—	2.20	9
Pretty Polly (New Rhod. R. Co.. Ltd.)	5	500	146.55	615
Do. (tailings)	—	315	80.87	340
Prince George (J. H. Veasey)	5	95	20.62	87
Do. (tailings)	—	206	51.58	217
Do. (slimes)	—	275	41.26	173
Scouts (Don Prop. Mines, Ltd.)	5	703	112.32	472
Selukwe Columbia G.M. Co., Ltd. ...	1C 3P	2835	1004.88	4220
Do. (tailings)	—	1990	197.00	815
Do. (slimes)	—	902	98.03	424
Sheba-Bongola (Forbes R. Synd.)	5	331	242.21	1017
Do. (tailings)	—	150	48.97	206
Tebekwe (Tebewke Synd.)	10	745	200.09	840
Wanderer (Selukwe) G. M., Ltd.. ...	4GR	18000	1723.30	7320
Gwelo District Total			16.214.55	68,182

Matabeleland Total ... ... 27,318.93 ozs.
Value £114,809

MASHONALAND.

Hartley District—	No. of Stamps.	Tons Treated.	Yield. Ozs.	Value £
Amaroso (C. H. Wheildon)	5	279	122.47	514
Do. (tailings)	—	145	42.01	176
Battlefields (Minaar & McArthur). ...	2C	1100	351.75	1477
Do. (tailings)	—	880	153.90	647
Do. (slimes)	—	220	10.22	43
Blue Rock (Ellsmoor & Goodyer)	2	216	143.30	602
Do. (tailings)	—	299	72.37	304
Brilliant (Mabel's Luck Synd.)	5	524	311.39	1308
Do. (tailings)	—	288	71.94	302
Brilliant Exten. (C. G. Bennett) (tailings)	—	900	52.84	222
Buller (J. Gunn) December	7	286	60.28	253
Do. (tailings)	—	240	55.92	235
Do. January	7	354	49.35	207
Do. (tailings)	—	240	60.38	254
Butterfly 1 N.E. (N. A. Arnold and Central M. and I Corp., Ltd.)	5	124	87.75	369
Cam and Motor G.M. Co., Ltd. Ball Mill	—	496	191.60	810
Concession & W. Ext. (C. E. Simpson)	5 1C 2P	2616	598.41	2513
Croupier (Croupier Synd.)	2	70	38.11	160
Crown No. 2 (Crown Synd.)	2	250	43.27	182
Do. (tailings)	—	200	32.49	136
Dalny (P. A. Wiggins)	5	434	70.63	297
Do. (tailings)	—	225	45.84	193
Dreadnought (W. E. Masters)	1C	787	57.82	243
Eiffel Blue & E. Ext. (Willoughbys Con. Co., Ltd.)	10	1260	462.69	1943
Do. (tailings)	—	810	67.19	282
Eileen Alannah M. Co., Ltd. (clean-up)	—	—	163.16	685
Do. (tailings)	—	—	33.86	142
Giant Mines of Rhodesia, Ltd.	30 2T	11363	4242.32	17994
Glasgow (Glasgow Mines, Ltd.)	5	304	65.19	274
Do. (tailings)	—	300	26.69	112
Glencairn No. 3 (Glenrosa Synd.). ...	4	432	432.75	1818
Do. (tailings)	—	800	82.82	348
Golden Valley (J. Mack)	5	378	170.89	718
Do. (tailings)	—	140	37.48	157
Goldmore (B. Secretan)	2	210	36.44	153
Do. (tailings)	—	110	31.15	131

	No. of Stamps.	Tons Treated.	Yield. Ozs.	Value. £
Goodsman (W. M. James)	2	74	93.79	394
Grogram (Union (Mash) Synd.)	5	375	116.03	487
Do. (tailings)	—	320	17.55	74
Heathfield (D. M. McBarnet)	5	250	165.50	695
I.X.L. (Heroine G.M. Co., Ltd.) ...	2	200	44.92	189
Kanyemba (Kanyemba Synd.)	5	170	153.06	643
Mali (McAdams & Harrill)	2	110	35.48	149
Mass (H. M. Eddowes) (December) ...	(2)	50	7.65	32
Masterpiece G.M. Co., Ltd.	5	700	269.98	1134
Do. (tailings)	—	625	51.65	217
Moliere (H. Moser) (Dec. & Jan.) ...	5&H	1250	177.96	747
New Gold Bug (Gilday & O'Connor) clean-up tailings	—	—	18.20	78
New Topaz (J. Hardy) (Dec.)	2H	810	72.36	804
Do. (tailings)	—	400	19.94	84
Do. (January)	2H	1000	102.86	432
Oleander G.M. Co., Ltd.	3	227	204.27	858
Do. (tailings)	—	227	75.47	317
Owl (A. Rolfe)	5&H	1125	541.61	2275
Do. (clean-up)	—	—	200.77	843
Do. (tailings)...	—	825	235.14	988
Pickstone, & I E. (S. L. Syndicate)	4	396	470.79	1977
Do. (tailings)	—	206	68.63	288
au Toy (C. R. Peacock) (tailings) ...	—	95	19,62	82
St. Oliven No. 2 (Yellow Jacket Synd.)	2	24	53.10	223
Shepherds (Phoenician Syndicate) ...	7	780	242.50	1016
Do. (tailings)	—	420	161.54	678
Turkois (R.E. & D. Co., Ltd.) (tailings)	—	242	72.06	303
Unknown (Brooks & Martin)...	—	199	65.17	274
Warthog (Coad & Tallon)	5	186	34.82	146
Washington (I. J. Minaar)	5	405	356.91	1499
Do. (tailings)	—	310	31.27	131
Whistlecock, 1 W (T. McDowell)... ...	2	230	40.51	168
Do. (tailings)	—	148	47.56	200
Hartley District Total			12.845.34	54,127
OMAGUNDI DISTRICT—				
Broken Hill (Sceptre Syndicate)... ...	1 P	725	93.76	394
Eldorado Banket G.M. Co., Ltd. ...	2C 20	7430	3323.82	14096
Do. (tailings)	—	8018	1059.31	4492
Kia-Ora (Flowers and Brittain)	5	450	45.34	190
hankuru (Hsrries and Anderson) ...	2	167	48.25	203
Do. (tailings)	—	212	15.97	67
Tripolitania (P. Prescot)	D	—	4.46	17
Lomagundi Total			4,590.91	19,459
MAZOE DISTRICT—				
hester (Benson & Tancred)	2	60	22,47	94
ypsey Jess (E. R. Southey) Dec.- Jan.	2	400	60.20	253
oth B (Goth Synd.)	2	156	117.04	491
ay G.M. Co., Ltd.	101T	2174	212.99	903
Do. (tailings)	—	2174	294.33	1248
umbo G.M. Co., Ltd.	30	3490	573.83	2439
Do. (tailings)	—	2320	566.83	2409
Do. (slimes)	—	1170	170.62	725
ion and Lion DB (Assd. Mines of Rhodesia, Ltd.)	5	870	150.53	632
Do. (tailings)	—	350	71.09	299
Mickey (B. G. Byerley)	2	202	215.66	906
Night Adder (Night Adder G.M. Synd.)	2	75	24.01	101
Paulette (E. Langlon) (pannings)... ...	—	—	0.95	3
Puff Adder (Puff Adder Synd.)	2	114	113.18	433
Umkulu D.B. 1W (Llaksram Synd.)..	2	151	87.57	368
Mazoe Total			2.681.30	11.304
SALISBURY DISTRICT—				
Gladstone A (L. Chiappini) tailings ...	*	300	15.70	66
Huguenot G.M. Ltd., clean-up	—	—	7.38	31
Mont d'Or (Claxton and Bussell).. ...	D	28	73.54	309
Old Loyalty (Shamva Ilex G.M. Co., Ltd.)	5	854	190.21	799
Do. (tailings)	—	667	75.29	613
Pannings (G. T. Smith)	—	—	6.01	25
Radnor 1 (Jones and Wyllie)	2	130	107.77	453
Tenga (Claxton & Bussell)	2	222	59.67	250
Salisbury Total			535.57	2,546
UMTALI DISTRICT—				
Bromley (Umtali Waterfall Synd.) ...	(10)	153	16.50	69
Do. (tailings)	—	104	10.36	44
Elgin Do. Do.	(10)	253	37,67	158
Do. (tailings)	—	223	28.21	118
King's Daughter (Umtali W. Synd.) (slimes)	—	305	42.60	179
Liverpool (Anderson & Snodgrass).. ...	5	850	110.35	463
Do. (tailings)	—	320	38.52	162
Lucknow D. B. 1E (J. de G. Birch, jun.)	3	15	6.97	29
Penhalonga Mines, Ltd.	45	5100	188.40	2072
Do. (Concentrates)	—	117	431.67	1792
Perthshire D.B. (Sussex Synd.)	5	290	103.32	434
Do. (tailings) December	—	230	27,10	114
Rezende Mines, Ltd.	35	3000	734.98	3119
Do. (tailings)	—	2665	261.75	1111
Do. (Concentrates)	—	5	20.52	85
Umtali (Umtali Waterfall Synd.)... ...	10	700	200.10	811
Do. (tailings)	—	648	69.55	292
Umtali Total			3,003.75	12,673

MASHONALAND TOTAL ... ... 23,656.87 ozs.

VALUE ... ... £100,109.

GRAND TOTAL ... ... 50,975.80 ozs.

VALUE ... ... £214,918.

SUMMARY.

Silver	13,567.30	ozs.	£1,461
Lead	42.85	tons	657
Chrome Iron	8,792.00	tons	19,625
Coal	20,836	,, sales	7,383

TOTAL VALUE JANUARY OUTPUT £244,044

The Colliery Manager in India.

In the well-known Indian journal "Capital," a correspondent gning himself "Mining Man," describes the unhappy lot of the lliery manager in India, which he describes as "even worse than is in this country." "I believe I do not overstate the case," rites this correspondent, "when I say that one hears out here of ore changes in the managers of collieries in twenty weeks than one es at home in twenty years. Here a manager takes over charge of place, and in what state, in many cases, does he find it? Machinery ckety and neglected, pumps out of order, lots of the lower workgs under water, tram lines in bad order or not sufficiently extended, al worked away where it should not bave been, possibly to an exnt snch as to endanger the mine or a large area of it, ventilation ulty—in fact, a general state of chaos. The new man has in conquence to set to and put the place in order, and, of course, has to end money in the process. That puts up his cost per ton. The ue pencil wallah notes this, and presently out he goes. Another in comes on, and for a time is able, owing to the work partially ne by his predecessor, to show fairly satisfactory results. Natury it does not last. There are so-called 'managers' at some pits Bengal who are nothing of the sort in the proper sense of the rd. They are figure heads, or dummies, merely carrying out orders om Calcutta offices. One cannot, of course, altogether blame the en; they know that non-compliance often means the sack, though the same time they are doing or following a course which their ofessional experience tells them is against the interests of the lliery as such. All this is probably unknown to the owners (*i.e.* reholders), and if they did know, I am not sure that they would e, so long as a dividend for the time being is forthcoming, and it does not appear to be realised by the gentry who sit in Calcutta offices, under electric punkas, and so effectually wield the beforementioned blue pencil."

CYANIDE of SODIUM, 120 %
ZINC DUST, SHEETS and SHAVINGS.
MABOR FUSION CUPELS and MATERIAL.
3 STAR CRUCIBLES and CRUCIBLE BARS.
3 STAR LITHARGE.
HARDWOOD MINING POLES and SAWING TIMBER.
"BRUNSVIGA" Calculating Machines.

RICHARD HEYMANN & CO.,
73/5, Exploration Buildings
P.O. Box 2425.
Telephone 351.
Telegrams: "Extra."

THE GOLDFIELDS RHODESIAN DEVELOPMENT CO.

A Quickly Consummated Fusion—Consolidated Gold Fields to Manage.

The formation of the Gold Fields Rhodesian Development Co. was completed in London three or four weeks ago, and the company has already taken the field of Rhodesian mining with a capital of three million pounds sterling. The new flotation ranks second only to the Chartered Company in point of capital, extent of property and potentiality, and that it will be a vastly important commercial and political factor in South Central Africa admits of not a moment's dispute. To our way of thinking the most remarkable feature of the flotation of this company has been the way in which it has been rushed through. For just how long details of the scheme of fusion had received the attention of the two contributary companies we cannot say, but it is clear from the short period of time that elapsed between the first public announcement of the formation of the company and the consummation of amalgamation details and from such statements accompanying the balance sheets, reports and schedules of assets as "audited in a hurry" that the formation of the concern was hastened with a celerity unprecedented for a concern of such magnitude. The company will be by far and away the most important factor in Rhodesian mining; it will, in fact, be a dominating factor, and that all the details of valuation and transfer for the numerous and important interests involved should have been completed in such a short space of time is indeed remarkable.

* * * *

To the average shareholder and the general public there are no very clear or telling reasons for the amalgamation. The union of two mining companies owning adjacent ground is often attended by immediate and beneficial results; the advantages of consolidating two such mines are generally obvious. But in the case of a large number of mining ventures scattered throughout the length and breadth of such a vast country as Southern Rhodesia, it is difficult to determine the real reasons for the amalgamation. There is no standard price for produce to be maintained and the circumstances would be very different were one concern possessed of all the cash and another of all the property. As a matter of fact the two concerns taking everything into account are fairly equally balanced in these respects, although it seems that the Rhodesia Exploration and Development Company have brought a greater amount of property into the concern than the Consolidated Gold Fields.

During the last year or two the reshuffling of the cards by the Rhodesia Exploration and Development Company has been so thorough that one can scarcely be surprised at the perplexity of the public as to what the real status of an original holder in the Rhodesia Exploration and Delevopment Company or one of the subsidiary concerns, the Antelope, for example, now amounts to in terms of shares in the latest amalgamation.

The formation of the Gold Fields Rhodesian Development Company will no doubt give additional tone and strength to Rhodesian mining and the Rhodesian mining market in many ways, but it is somewhat difficult to understand why the union of the two principal mining and financial corporations of Southern Rhodesia should have been deemed so necessary and so beneficial, and it has been suggested that the virtual retirement of a prominent figure in Rhodesian mining circles from the field of industry in Matabeleland and Mashonaland was the prime reason for the move. Of course it may be argued that the consummation of the amalgamation scheme will be of beneficial influence in hastening development and increasing ore reserves. Such a policy is highly commendable, especially in Rhodesia, where further ore reserves are urgently required. It may be recalled that a similar reason was advanced in justification of the amalgamation of the Rhodesia Exploration and Development Company, the Etna Development Company, the Rhodesian Abercorn Shamva Trust, and the Gold Schists of Rhodesia, Ltd., in September, 1910. As a matter of fact, we have not observed any very marked pushing forward of development on the mines concerned as a consequence of the previous amalgamation, although one can scarcely doubt that in the future the directors of the Gold Fields Rhodesian Development Co. will do their best with the labour available to augment ore reserves, especially at the mines which give promise of developing into really large propositions.

* * * *

The Consolidated Gold Fields of South Africa Company, it is interesting to observe, are the managers of the amalgamated Company, and this corporation receive £10,000 per annum as remuneration, exclusive of any remuneration for providing office accommodation or secretarial assistance, or for advice or services of the engineers or other expert advisers.

From Bulawayo we learn that the old Gold Fields Building is being enlarged and renovated, and that this will constitute the home of the new company in Rhodesia. The Consolidated Gold Fields of South Africa, Ltd., has in the past managed and directed a number of the chief mines of Rhodesia with distinct success. The company has relinquished or practically relinquished control of certain propositions of recent years, but the new amalgamation should give the brains of the concern ample opportunity for demonstrating their technical and administrative abilities. We shall look to the new company materially to advance the fortunes and status of mining in Southern Rhodesia.

Reduction of Capital.

An application on behalf of the African and European Company, Limited (and reduced) was dealt with by Mr. Justice Ward in the Rand Division of the Supreme Court this week. Previously his Lordship had reserved judgment on the question of notice to shareholders as to a proposed reduction of capital from £1,700,000 to £1,275,000. His Lordship said: According to Section 65 (1) notice, as prescribed, must be given. The prescribed notice in South Africa is that where there are shareholders whose registered address is outside South Africa it must be by advertisement, two months at least before the meeting, in a leading daily newspaper in London, or by prepaid registered post, addressed to each member at his registered address. In the ordinary course of events where a notice may be given by advertisement it is taken to be given on the day on which the advertisement appeared (see Mercantile Investment Company v. International Company, Mexico, 1893). When the law requires the notice to be published two months before the meeting, it intends the persons to whom the advertisement is addressed to have two months' notice of such notice. It is agreed that under Section 134 of the articles of association notice by letter must be dated from the posting of the letter. But this provision only applies to notices sent in accordance with the provisions of the articles and cannot be used to interpret the language of the Act itself. Under Transvaal Proclamation No. 15 of 1902, Section 12, it is provided: Where any law authorises or requires any document to be served by post . . . . then unless the contrary intention appears, the service shall be deemed . . . . unless the contrary is proved to have been effected, at the date at which the letter would be delivered in the ordinary course of the post. His Lordship would, therefore, grant no order.

CERTIFICATED MINE MANAGER

With 20 years' experience in the Transvaal is open for engagement at the beginning of March. Excellent credentials and well recommended. Apply—B.L., c/o "S.A. Mining Journal," Box 963, Johannesburg.

Chicago-Gaika Development.

The thirteenth ordinary general meeting of the Chicago-Gaika Deelopment Company, Limited, was held in mail week, at Salisbury Iouse, E.C., Sir John C. Willoughby, Bart. (chairman of the comany), presiding. The Chairman, in the course of his speech, said : 'he profit and loss account shows a profit of £10,482 on securities ealised, and £4,763 from interest and dividends. It is worthy of ote that this latter item includes a first dividend paid during the ear by the Gaika Gold Mining Company. The net result of profit nd loss for the year under review was a credit balance of £12,824. 'aking all circumstances into consideration, this must appear satisfacory. To-day the balance of cash in hand or on short loan is somehing over £20.000, and our realisable investments at the market price f to-day represent a value of from £110,000 to £115,000, making a otal amount of £135,000 approximately, equivalent to some 13s. 6d. er share on the total issued capital of the company. In addition, e hold properties, interests, etc., which we believe to be of considrable potential value, standing in the books at a cost of £79,795. f it is agreed that this latter figure at least represents the value of hose particular assets, then the value of the whole of the assets of e company represents more than 20s. in the £ on the total issued apital of the company. With a cash working capital of £50,000, the ompany was originally formed for the purpose of acquiring and deeloping some 437 gold claims in Rhodesia. With the exception of e Gaika property, comprising 100 claims, upon which a considerble amount of development had been effected prior to the creation of is company, little was known about the balance of the claims, ough several properties were considered as offering favourable indicaons. Most of our original working capital was spent on the further evelopment of the Gaika mine, which, as you are aware, was subseently floated into a separate mining company, when this company vendors received back all or most of the cash it had expended—mely, £40,000, and upwards of 100,000 Gaika shares. We then proeded to test and prospect our various other properties, but, unfornately, without success, and most of the claims were in conseence abandoned. As a result, in the year 1909 the company was left ith only some £12,000 cash, a large holding in Gaika shares, more less unrealisable at 4s. a share, and 60 claims. Against these 60 aims we had a property and outlay account, which, although conderably written down on the flotation of the Gaika mine, still stood the books at a cost of close on £100,000. It then became the licy of the board to endeavour to acquire new interests, and, as I formed you last year, a working arrangement with Willoughby's onsolidated was entered upon for the purpose of taking interests in y options on new properties acquired by the latter company. Of e original claims retained, the Golden Quarries 40 claims were sub quently sold to the Gaika Company on account of the gold-bearing bble overlying them, this company still retaining a half-interest all reefs, if any, existing below the surface rubble. The Primrose. mprising 20 claims, we still retain, and though we have received all amounts from tribute royalty their value is somewhat problemical. As a result of the arrangement with Willoughby's Consolited, we have so far acquired interests in three new discoveries. e first is a 25 per cent. interest in the Connemara and Renmore (96 ims), situated near Hunter's Road Siding, in the Gwelo district. e also have an option to acquire a similar interest in 90 additional ims on the direct extension of the former. The formation is nded ironstone, and the considerable development already accomished has disclosed at least two ore bodies of great width and exnt. The mineralisation appears to be somewhat irregular, and, erefore, it is difficult to estimate the exact value without test ushings. However, on the first, called the east lode, driving the first level has exposed an approximate average value 36s. 6d. r ton over the total width of the drive, and er a total length of 635 feet, driven. The average value s been estimated after reducing all high assays. Driving at second level is expected to commence towards the end of this nth, and, should the same values be maintained, the work should far to prove a valuable property. When a little more work has n effected probably it will be advisable to erect a small reduction nt for the purpose of test crushings. A second ore body, desiged as the west lode, is also stated to have so far disclosed payle values. From these few statistics it will be seen that the proects of the Connemara are distinctly promising. Our second inter is in 120 claims on the Cactus Reef, situated about nine miles m the Globe and Phoenix. We have acquired a 15 per cent. inter in an option on this property, with the right acquire a further 10 per cent., or 25 per cent. all. This option having been more recently acquired, Cactus Reef is not so far advanced in development as the Connara; the work, however, now proceeding is giving good results. o ore bodies of quartz and schistose formation are being opened up, one having so far a width of 45 ft. and the other of 23 ft., and wing fair average values. The work of the next few months uld give very important information. The third interest is 34 cent. in an option on 14 base metal claims, the equivalent of gold claims, covering an area of over 920 acres, on a recent covery of tin in the Victoria district, which has created a considble amount of interest. Very rich float tin ore has already been nd, assaying in some instances as high as 75 per cent. tin, besides h-grade occurrences of the same metal in quartz contained in fraces of lepidolite, and we are hopeful of tracing the main lode ing the period of the option, which does not expire till towards the of this year. With regard to the Gaika mine, the report to e 30th last has been forwarded to you, together with a copy of the ort of the general meeting held on December 23rd last. The latest elopments are reported to be very satisfactory, and we have ry reason to be satisfied with our interest in this property. The mal business was transacted.

REVIEW.

"*Types of Ore Deposits*," *Mining and Scientific Press*, San Francisco, and *The Mining Magazine*, London.

"This book," the editor of the work tells us, "is designed to present an accurate account of the present state of opinion regarding the genesis of ores. The individual chapters have been written, each by a different engineer and each by one particularly familiar with the type of deposit that he describes." We have, for instance, chapters by H. Foster Bain, S. F. and W. H. Emmons, F. H. Hatch, J. D. Irving, J. F. Kemp, R. A. F. Penrose, Jr., and T. A. Rickard—to mention names that are probably more familiar to Rand geologists than those of the other writers—on such subjects as the lead and zinc deposits of Wisconsin, the cobalt district, contact deposits, the conglomerates of the Witwatersrand, replacement ore bodies, outcrop of ore bodies, causes of ore shoots, etc., each of which comprises an economic geological study based on wide experience above and below ground, and written with the full knowledge of the modern views upon ore genesis. The work does not cover the entire field of typical ore deposits, but it deals with many of those which are most important from an industrial point of view and has a sufficiently wide range to enable it to bring into the discussion pretty well the whole theoretical aspect of the problem. From this standpoint alone, as giving practical evidence which bears upon the various theories of ore genesis, it is an extremely valuable publication, apart from its usefulness as a descriptive record of the characteristics of well-known individual occurrences. A good deal of the matter comprised in the book has already been published in magazines, periodicals and scientific transactions, but the arranging of this material into one well-balanced and more or less exhaustive resume of the subject indicated by the title is an excellent idea and one which has been admirably carried out by the editor, Mr. H. Foster Bain. It is much to be regretted that the economic study of geology, in the sense exemplified by "Types of Ore Deposits," has not yet been facilitated by the Government of the Union of South Africa. To those who are unaware of its importance no less than to those who are interested in advanced geological thought, we can confidently recommend this new work.

Diamond Output for 1911.

The following statistics of production of diamonds for the Union during 1911 were compiled by the Department of Mines and issued with the statistical return for January :

	Production from mines.			Production from alluvial, estate, river diggings, and miscellaneous.		Total Production.	
	Loads Washed. 1 Load = 16 cubic ft.	Weight carats.	Value £	Weight carats.	Value £	Weight carats.	Value £
Pretoria	8,211,781	1.802.092.94	1,426.891	2,154.57	1.909	1.804.247.51	1,428.800
Pietersburg . .	—	—	—	951.19	3,474	951.19	3.474
Klerksdorp—							
Bloemhof Town Lands . .	—	—	—	18,317.25	97,082	38,142.38	196.602
Mooifontein .	—	—	—	19,101	95,258		
Other places.	—	—	—	724.13	4.262		
Transv'l totals	8,211,781,	1,802,092.94	1.426,891	41.248.14	201,985	1.843,341.08	1,628.876
The value per carat from mines was 15s. 10d. and from alluvial 97s. 11d. per carat.							
Kimberley . . .	6,207,269	2,148.479	4.957,216	8,629	52.026	2,166,944.5	5,019.386
Barkly West . . .	11,492	296	1,076	78,365.38	465,094	78,661.38	466.170
Herbert	—	—	—	2,001.75	9,981	2,001.75	9,981
Kuruman.	—	—	—	2,897.75	10,875	2,897.75	10,875
Cape totals . .	6,218,761	2,148,775	4.958,292	91.893.88	537,976	2,250.505.38	5.596.412
The value per carat for mines was 46s. 2d. and for alluvial 117s. 1d.							
Boshof	336,335	90,902.19	93.553	507.63	2.674	91,409.82	96.227
Fauresmith	4,263,417	462,367	1,302,418	3	4	462,370	1,302,422
Kroonstad	1,715,884	242,211.75	210,541	33.57	61	242,145.32	210,602
Winburg	29,921	2,221.95	2,135	—	—	2,221.95	2,135
Other places . . .	—	—	—	5	50	5	50
O.F.S. totals . . .	6,345,557	797,602.89	1.608,647	549.2	2,789	798,152.09	1,611,436
The value per carat from mines was 40s. 4d. and from alluvial 101s. 7d. per carat.							
Union of S.A. totals .	20,776,099	4,748,470.83	7.993,830	133,691.22	742.750	4.891.998.55	8,746,724

Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

Cinderella Consolidated and the Eight Hours' Day.

To the Editor, *South African Mining Journal.*

Sir,—I notice in the report of the debate on the Mines and Works Amendment Bill that Mr. Madeley is stated to have "pointed out that the shift on the Cinderella Deep had a day of 8½ hours, and this was the deepest mine on the Reef, yet the mine wished the House to believe that to go down the deepest mine took 90 minutes. The Cinderella example showed that it was quite possible to have an improved condition of things if the owners so willed." Now, sir, in quoting the Cinderella Mr. Madeley has overlooked, or is unaware of, a very important point which is that owing to this mine being very short of labour, practically all work has ceased on the incline, *i.e.*, below the 4,000 feet station, mining work being practically confined to the north of the vertical shaft. In this section the cross-cuts are short and there is only a short distance (2,200 feet) on the strike; 15 minutes or so is, therefore, *at present*, ample time for men to reach their working places. With the extension of mining operations both in depth and to the eastward, it is evident that the 90 minutes as quoted by the Minister of Mines will in all probability be not more but *less* than is required. The Cinderella is one of the many mines on which the future of the industry depends and by reason of its great depth it must present arguments *against* an 8 hours' day "bank to bank" instead of being quoted as an instance in support. I shall be obliged if you will kindly publish this letter in your valuable paper.—Yours, etc.,

M. E.

Boksburg,
23rd February, 1912.

Do our Auditors Shirk their Duties?

To the Editor, *South African Mining Journal.*

Sir,—I shall be much surprised if Mr. William Pott does not find that he has brought a hornet's nest about his ears in consequence of his extraordinary statement made at the East Rand Proprietary Mines regarding auditors. According to the report before me, Mr. Pott remarked: "I think it is a pity that the auditors of the company are not more independent than they are. Continuing, Mr. Pott said that it might be achieved in two ways. The auditors were the direct representatives of the shareholders as against the board, and they ought to give instructions, not receive instructions. Either the Company Law should be altered, and an auditor, once appointed by shareholders, should be removed only by an order of Court, or there should be an assurance from the board that the auditors would have a fixed appointment for a long number of years, and then it would be the business of the shareholders to see that auditors made a report entirely in the interests of the shareholders, whether it pleased the board or not." I notice that Sir George Farrar, in reply, said: "Auditors are elected by shareholders at every annual meeting, and, candidly, I think that is perhaps the best system, because the auditors are in your hands. Should the directors not do what is best in the interests of the shareholders you can always bring them to book. So far as I am concerned, I have always found auditors not under the influence of any director, but independent auditors, who do their duty to the people who have elected them." I shall be more than surprised if the auditors and accountants in this town do not keenly resent Mr. Pott's statements, and I trust that the local "watch-dogs of commerce" will lose no time in bringing the matter up for formal consideration and condemnation.—I am, etc.,

"INTERESTED."

[We believe that some of the leading Johannesburg auditors are taking action in the matter.—Ed., *S.A.M.J.*]

Rose Deep.

The directors' quarterly report for the three months ending 31st December, 1911, states:—

Mine.—Development work—Number of feet driven, sunk and risen, exclusive of stopes, 3,410 feet. The reef disclosures were as follows: Main Reef, distance exposed 1,004 feet, width 29 inches, assay value 9.7 dwts.; Main Reef Leader, distance exposed 1,053, width 17 inches, assay value 11.1 dwts; South Reef, distance exposed 890 feet, width 15 inches, assay value 10.8 dwts. Ore treatment—The following were the results obtained from the reduction operations:—Milling: Percentage of waste sorted out, 13.9 per cent.: number of stamps in operation, 300 stamps; average running time, 83 days; ore milled ,186,400 tons; milling duty per stamp per 24 hours, 7.5 tons; yield, 39,892 ozs. fine; yield per ton milled, 4.28 dwts. fine. Cyaniding: Tons treated, 186,996; yield. 22,685 ozs.; yield per ton treated, 2.43 dwts. fine. Summary of ore treatment (on basis of tonnage milled): Milling. 30,892 ozs. fine, 4.28 dwts. fine per ton; cyaniding, 22.685 ozs. fine 2.43 dwts. fine per ton. Total, 62,577 ozs. fine, 6.71 dwts. fine per ton. Working expenditure and revenue:—Mining expenses—Mining, £96,315 8s., developing £8,784 19s. 3d.—£105,100 7s. 3d.; cost per ton milled, 11s. 3d.; reduction expenses, £42,275 18s. 4d.; cost per ton milled 4s. 7d.. General expenses—Mine £11,729 10s. 4d, cost per ton milled 1s. 3d.; head office, £4,424 3s. 1d. cost per ton milled 6d. Total, £163,529 19s., per ton milled 17s. 7d. Working profit. £99,126 0s. 11d.; per ton milled, 10s. 7d. Total. £262.655 19s. 11d: per ton milled, £1 8s. 2d. Other net expenditure (after deducting interest, etc., received), £1,651 15s. 11d.; net profit, £97,474 5s. Total, £99,126 0s. 11d.

Note.—The 10 per cent. tax on profits due to the Government for the quarter is estimated to amount to £9,258. Reserve gold—At the 31st December, 1911, the company had 6,127 ozs. of fine gold in reserve. The capital expenditure for the quarter has amounted to £5,822 9s. 9d. The sixteenth annual meeting of shareholders will be held in the Board-room, The Corner House, Johannesburg, on Thursday, 7th March, 1912, at 11 a.m. It will be proposed at this meeting to adjourn until 23rd May, 1912, at 3 p.m., in order to give shareholders ample opportunity of perusing and considering the report and account, which it is anticipated will be in the hands of shareholders about the 6th April, before deciding as to the disposal of their proxies. A special circular dealing with this subject has been addressed to shareholders. An interim dividend (No. 21) of 20 per cent. was declared on 15th December, 1911, for the half-year ending 31st December, 1911, and will be payable on or about 5th February, 1912, from the Head and London Offices, to shareholders registered on the company's books at 31st December, 1911. Holders of share warrants to bearer will receive payment of coupon No. 21 attached thereto, on presentation either at the London office, or at the Compagnie Francaise de Banque et de Mines, 20 Rue Taitbout, Paris.

TO CONTRIBUTORS.

The Editor invites Contributions on any subject of interest relating to mining and other industries of South and Central Africa, as also of suitable non-copyright photographs or snapshots of mining or engineering interest. Subject to special arrangement, the scale of remuneration for all articles inserted is at the rate of Two Guineas per page, and 5/- for every photograph. No responsibility can be accepted for their safe transmission, but anything that may be submitted for the consideration of the Editor that is not accepted by him will be returned if a stamped and directed envelope is enclosed for the purpose.

JANUARY GRADE, COSTS, AND PROFITS.

Improved Grade—Increased Working Costs—Larger Tonnage Milled.

The usual monthly analysis of the gold production for January, issued by the Chamber of Mines, is presented hereunder :—

THE WITWATERSRAND

	Total value recovered.	Value recovered per ton milled		Total working cost per ton milled.		Total working costs.	Working profit.	Working profit per ton milled.	
	£	s.	d.	s.	d.	£	£	s.	d.
1. Aurora W. United	14,115	24	0	18	10	11,110	3.030	5	2
2. Bantjes Cons. ...	34,300	30	8	25	9	28,317	5,430	4	11
3. Benoni Cons.	27,326	18	4	21	2	17.963	*2,649	*3	1
4. Brakpan Mines ...	59,124	28	6	18	1	37,115	21,373	10	5
5. Cinderella Cons....	21,540	26	5	23	5	19,137	2,629	3	3
6. City Deep...	62,981	32	9	22	0	41.690	19.510	10	4
7. City and Suburban	47,494	32	2	21	3	28,829	17,788	13	1
8. Cons. Langlaagte	27,712	25	7	18	3	19,803	7,909	7	4
9. Cons. Main Reef ...	24,242	31	4	22	10	17.675	6,268	8	1
10. Crown Mines... ...	255,769	34	4	19	2	141.917	109,288	14	9
11. Durban Rond.... ...	15,500	21	10	16	0	11,321	4,180	5	4
12. Durban Rood. Dp.	32,907	26	7	24	1	27.303	5,008	4	5
13. East Rand Prop.	243.565	28	3	21	1	173,231	67,108	8	2
Do. (reserve gold transferred from 1911)	74,638						74.638		
14. Ferreira...	32,572	28	7	18	3	19.208	10.376	9	1
15. Ferreira Deep... ...	58,020	41	10	25	0	34,689	22,599	16	3
16. Geduld Deep... ...	17,832	26	8	21	5	14,299	3,489	5	3
17. Geldenhuis Deep	90,094	31	2	25	1	71,808	17,092	6	0
18. Ginsberg	19,064	30	9	21	9	13,477	5,585	9	0
19. Glencairn M.R. ...	16,052	15	11	14	1	13,280	2,772	2	11
20. Jubilee	55	—		—		—	—	—	
21. Jumpers-cum-Tre'y	16,392	32	8	30	11	15,155	1,008	2	1
22. Jupiter	31,340	19	2	18	0	29,477	1,449	0	11
23. Knights Central ...	26,391	21	0	18	8	23.016	2,929	2	5
24. Knights Deep ...	53,908	18	2	11	2	32,827	20,421	7	0
25. Lancaster West ...	23,371	19	11	20	2	23,180	134	0	1
26. Langlaagte Estate	56.660	19	3	—		—	14,000	5	4
27. Luipaardsvlei	17,972	18	6	17	4	14,423	2,462	3	0
28. Main Reef West...	23,303	34	1	22	6	15,404	7,580	11	1
29. May Consolidated	17,509	25	4	15	1	10,451	7,017	10	2
30. Meyer and Charlton	27,164	35	1	17	5	12,249	14,991	21	4
31. Midas Deep	2,761	22	1	11	10	1,477	1.279	10	3
32. Modderfontein B	52,417	33	9	18	10	29,360	22,400	14	5
33. New Goch	31,951	21	1	16	1	24,459	7,533	5	0
34. New Heriot	22,232	40	11	24	2	12,554	9,402	18	1
35. New Kleinfont'n .	54,545	28	1	19	6	37,764	16,115	8	4
Do. (reserve gold transferred from 1911)	7,926						7,926		
36. New Modderfont'n	81,765	30	10	17	5	45,903	34,802	13	3
37. New Primrose ...	33,081	27	1	14	7	16,583	16,499	14	6
38. New Rietfontein ...	21,608	25	2	20	11	17,929	3,681	4	4
39. New Unified... ...	16,392	30	3	22	2	11,684	4,709	8	11
40. Nourse Mines... ...	78,222	29	9	22	9	58,978	18.210	7	0
41. Princess Estate ...	17,242	22	2	27	9	19,536	*2,526	*3	7
42. Randfont'n Central	265,275	24	3	—		—	74,000	6	10
43. Robinson	109,715	45	5	15	10	38,255	70,047	29	0
44. Robinson Deep ...	82,787	33	3	17	10	41.663	35,020	15	0
45. Roodepoort United	31,454	21	2	18	4	25,751	5.856	4	2
46. Rose Deep...	91,645	28	7	17	10	57,142	33.382	10	5
47. Salisbury	5,025	14	7	16	1	5,539	*497	*1	5
48. Simmer and Jack	77,067	22	11	12	3	40,464	36,146	10	11
49. Simmer East	23,617	16	3	15	9	22,549	760	0	6
50. Simmer Deep	38,858	17	7	17	3	38,089	238	0	1
51. Spes Bona Tribute .	6,584	24	0	—		—	—	—	
52. Van Ryn	54,957	28	0	15	2	29,785	25,188	12	10
53. Village Deep	70.143	28	8	19	0	46.588	22,535	12	10
54 Village Main Reef	69,123	43	6	21	10	34,012	32,782	21	1
55. Vogelstruis Estate	12,123	22	0	21	6	11,116	1,031	2	1
56. West Rand Central	3,874	31	0	27	9	3.462	414	3	4
57. West Rand Cons.	33,481	23	3	20	10	30,057	3,572	2	6
58. Witwatersrand ...	40,133	25	2	16	3	25,939	14.193	8	11
59. Wit. Deep...	49,911	25	10	19	3	36,783	12,412	6	6
60. Wolhuter	40,659	27	7	17	0	24,970	15,034	10	3
Miscellaneous producers	15,948	—		—		—	—	—	
Witwatersrand totals	3,012,832	27	6	18	10	—	997,557	8	11
				58 cos.			58 cos.	58 cos.	

*Loss

†The apparent discrepancy between grade, costs and profit arises from profits from treatment of accumulated slime.

The apparent small disagreement between working costs and profits per ton milled and value per ton is due to inclusion of value won from accumulations and by products.

OUTSIDE DISTRICTS

	Total value recovered.	Value recovered per ton milled		Total working cost per ton milled.		Total working costs.	Working profit.	Working profit per ton milled.	
HEIDELBERG—									
1. Nigel	19,055	25	10	22	10	16.004	2.836	4	1
2. Sub Nigel	7.663	41	9	40	7	7.472	76	0	5
BARBERTON—									
3. Barrett	816	5	11	—		—	—	—	
4. Sheba	11,533	40	1	—		—	—	—	
5. Sheba (Rosetta) ...	2,434	20	8	—		—	—	—	
6. Worcester	5,225	24	11	—		—	—	—	
LYDENBURG—									
7. Glynn's Lydenburg	7.480	47	8	18	10	2,964	4,356	27	9
8. Trans. G.M. Est.	30,295	50	9	23	0	13,728	16,248	27	3
Miscellaneous producers	33,497	—		—		—	—	—	
Total (outside districts)	117,998	35	1	24	6	—	23,516	14	4
				4 cos.			4 cos.	4 cos.	
Grand totals	3.130.830	27	8	18	11	—	1,021.073	9	0
				62 cos.			62 cos.	62 cos.	

A comparison of value recovered per ton milled, working costs and profits per ton with December shows that the value recovered on the Witwatersrand for December was 27s. 10d. or 4d. per ton more than for January. Working costs in January were 18s. 10d. as against 18s. 5d. for December. For January, 1911, the tonnage milled was 1,855.232; for February, 1,712,198 tons; for March, 1,960,678 tons: for April, 1,926,583 tons; for May, 2.002,926 tons; for June, 1,989,559 tons; for July, 2,095,220 tons; for August, 2,107,809 tons; for September, 2,037,329 tons; for October, 2,083.900 tons; for November. 2,089,367 tons; for December, 2,030,437 tons; and now for January. 1912, 2,067,161 tons. In the outside districts the total tonnage milled in January was 47,233 tons, making a total for the Transvaal of 2,114,394 tons.

Mr. Penlerick's Case.

Mr. Sidney Penlerick. ex general manager of the East Rand Proprietary Mines, who was committed for trial at Boksburg on the 16th inst., on a charge of contravening the Mines and Works Regulations, will appear before the Magistrate at Boksburg at an early date, the Attorney-General having remitted the case. The allegation is that Mr. Penlerick, during last year, while general manager of the E.R.P.M., in which capacity he was required to make monthly returns, wrongfully, unlawfully, and intentionally sent in false statements. It is alleged that he submitted (1) returns during the period from January to August, 1911, inclusive, purporting to be returns of the gold recovered during each of the months in question, whereas, the gold recovered in each case was for a period longer than a month; and (2) that in March, 1911, an amount of gold of 4.700 ounces was shown on the form prescribed by the Government Mining Engineer as having been derived from milling, whereas it had been derived from cyaniding..

Weynek Tins: Liquidator's Report.

Mr. H. Hargreaves, liquidator of the Weynek Tins Company, has reported to the Master of the Supreme Court that the liabilities totalled a sum of £17,256 14s. 8d., of which he estimated £596 3s. 8d. to rank as preferent. The assets consist of cash, £94 2s. 7d.; plant, etc., estimated to realise £1,525; tin on hand estimated at £740; and live stock, £80; or a total of £2,439 2s. 7d. The realisation of the assets is now being conducted under the supervision of the Master of the Supreme Court. At this stage, he does not anticipate that there will be any considerable dividend to concurrent creditors in the estate, while it is safe to assume that there will be no return to shareholders.

MINING MEN AND MATTERS.

The Marquess of Winchester, chairman of the Victoria Falls and Transvaal Power Co., Ltd., and a director of the British South Africa Co., returned to Johannesburg from Rhodesia this week.

* * * *

Mr. J. L. Holman, managing director of Holman Bros., Ltd., accompanied by Mrs. Holman, arrived in South Africa by the Edinburgh Castle. Mr. Holman is now in Johannesburg on a business visit.

* * * *

It has been found desirable to postpone the proposed visit of the South African Institution of Engineers to Modder B., Ltd., which had been arranged for Saturday next, March 2. The visit will be paid two or three weeks later, and ample notification will be given to members of the date finally arranged upon.

* * * *

Mr. Frank Harvey, head of the firm of Harvey & Co., Ltd., of Hayle, Cornwall, arrived a few days ago on the Rand, and was met by his son, Mr. W. F. T. Harvey, Mr. H. A. Young, President of the Cornish Association of the Transvaal, Mr. G. L. Vincent, the Hon. Treasurer, Mr. W. G. Tickell, the General Secretary, and many others.

* * * *

His many friends on the Rand will regret to hear that Mr. J. D. Griffin, the able and popular manager of the A.E.G., has severed his connection with the company as from the 1st instant. Mr. Griffin returns immediately to London. His successor is Mr. J. E. Rosenthal, who has already arrived from London and taken over the management. Mr. Rosenthal is accompanied by Mr. MacVess, who is making a short stay.

* * * *

Mr. W. A. Wills, a director of the Victoria Falls and Transvaal Power Co., Ltd., arrived from Rhodesia this week on a brief visit after an absence of twenty years in London. Mr. Wills has received a most hearty welcome from many old pioneer friends. With Mr. Rathbone, he was the founder of the *South African Mining Journal*. Mr. Wills speaks enthusiastically of the prospects of Rhodesia for the "small man." He intends to build a house in the Selukwe hills, overlooking the Tebukwe Valley, and to reside there at least some months of every year.

* * * *

It is notified that the Minister of Mines has been pleased to appoint the undermentioned gentlemen to be members of a Committee "to inquire into by experimental or other investigation and to report from time to time upon the improvement of the methods for the prevention of miners' phthisis in the Witwatersrand gold mines and to advise upon the introduction of a systematic and uniform policy and the amendments to the Mining Regulations which may be necessary for combating the disease": Messrs. Robt. Nelson Kotze, Acting Government Mining Engineer (Chairman), Robert James Hamilton Allen, William Thomas Anderson, Edward Henisley Bulman, William McCallum Cameron, Malcolm Fergusson (Inspector of Mines), James Arthur Hebbard, William Lincoln Honnold, Charles Jacob Nicholas Jourdan, (Assistant Inspector of Mines), James Gauson Lawn, Charles Duff Leslie, Benjamin Madew, John Thomas Mitchell, Dr. James Moir (Chemist to the Mines Department), Messrs. Robert Nesbit Reid, Stephen Richards, Andrew Russell Robertson, James William Hill Stubbs, Samuel Clifton Thomson, Mathew Trewick, Joseph Philip Ward, Edward John Way.

* * * *

The appointment by the Governor-General of a Commission is gazetted: (a) To enquire into and take evidence for the purpose of ascertaining the extent and causes of the prevalence and spread of tubercolosis, in its various forms, among Europeans, coloured persons, natives, and Asiatics in the different areas of the Union; having regard, *inter alia*, to the effect of race, immigration, occupation, housing, and the concentration of persons in compounds, mission stations, and locations, and of conditions of life generally, in spreading the disease; and to report as to the steps which can be profitably taken by the Government, local authorities, and others for ameliorating the condition of those affected with the disease, and for controlling the disease in those areas in which it already prevails, and for preventing its introduction into fresh areas; (b) To enquire into and take evidence for the purpose of ascertaining the extent and causes of the mortality of natives employed on the Witwatersrand Mines, and their susceptibility to pneumonia, with special reference to those coming from tropical areas, and to make recommendations thereon. The following are to be the members of the Commission:—Alfred John Gregory, M.D., M.R.C.S., L.S.A., D.H.P. (Chairman), The Hon, Robert Jameson, the Hon. Thomas Te Water, M.D., M.Ch., Charles Porter, M.D., B.Ch., D.P.H., and George Alfred Turner, M.B., B.Ch., D.P.H. (secretary).

* * * *

The directors and management of the Clydesdale Collieries, Limited, have very kindly extended a cordial invitation to the Chemical, Metallurgical, and Mining Society of South Africa to visit and inspect their colliery near Coalbrook Station, Orange Free State, which invitation the Council has had pleasure in accepting. It has been decided that the visit will take place on Saturday, March 9, and as the colliery is over 60 miles from Johannesburg, practically a whole day will be required for the excursion. A special train with dining car attached, has been arranged for, and as a considerable guarantee is required, those desiring to avail themselves of this excellent opportunity of inspecting a thoroughly up-to-date colliery and plant are requested to notify the secretary (Mr. Fred Rowland) immediately of their intentions. Members from stations west of Park and east of Germiston must take and pay for ordinary tickets to Park and Germiston respectively.

Weltevreden Claim Licences.

His Excellency the Governor-General has been pleased to fix that until further notice the licence monies set out in the following schedule shall be paid upon claims or portions of claims upon the farm Weltevreden No. 37, Bloemhof:—For a claim 150 by 150 feet, £2 10s. per month; for a portion of a claim, 90 by 90 feet, £1 per month; for a portion of a claim, 90 by 45 feet, 10s. per month; for a portion of a claim, 45 by 45 feet, 5s. per month.

In accordance with the provision of sub-section (3) of section *twenty-six* of the Precious and Base Metals Act, 1908, of the Transvaal (Act No. 35 of 1908), it is the intention of His Excellency the Governor-General to proclaim, either wholly or partially, as a public digging for base metals, under Chapter IV. of the Act as applied to base metals, the farm Storm No. 568 (owner, Government), in extent 636 morgen 500 square roods, situated in the Magisterial District of Zoutpansberg.

When communicating with advertisers kindly mention the *South African Mining Journal*.

Situations Wanted.

Position as Mine Manager, in Transvaal, or any part of the World. Advertiser has Home Training, and 14 years' experience in all branches of Gold Mining on the Rand. Holds Transvaal Mine Manager's and Surveyor's Certificates.

Apply, F.S.W., c/o this Office.

Civil Engineer, specialised in cyaniding, chemistry and electricity, open for engagement.

Apply P.O. Box 1625, Johannesburg.

"S.A.M.J." ANNIVERSARY NUMBER.

Special Competitions—An Interesting Announcement.

Essay Competition.

In connection with the issue of our twenty-first Anniversary Number, which will be published in June next, four prizes, each of £3 3s., are offered for the best essays received on some aspect of—

(a) Mining;
(b) Metallurgy;
(c) Mechanical Engineering;
(d) Electrical Engineering.

One prize will be given for the best contribution received under each of the above headings. Essays must be written with special reference to the mineral industries of the Union of South Africa, Rhodesia, German South-West Africa, Portuguese East Africa, or the Katanga region of the Belgian Congo. They must be of topical and South African interest. A very wide range of subjects is thus open, and it is hoped and believed that many valuable contributions will be submitted. The winning essays will be reproduced in the Special Anniversary Number of the *South African Mining Journal*, and will thus find a place in a production which will be remarkable in the records of South African journalism. The attention of competitors is directed to the following rules of the competition:—

1. Contributions must reach this office not later than March 31st, 1912. They must be addressed: "Anniversary Department, *South African Mining Journal*, P.O. Box 963, Johannesburg, Union of South Africa," and marked "Essay Competition," in the top left hand corner.

2. Contributions must be of not more than 1,500 words in length.

3. It must be distinctly understood that the decision of the Editor and Editorial Staff of the *South African Mining Journal* and of such judges as may be asked to adjudicate will be final and absolute.

4. Under no circumstances can responsibility be recognised for the safe return of manuscripts. At the same time every endeavour will be made to secure their safe return, if a fully stamped and addressed envelope is enclosed.

5. The right is reserved to reproduce in any issue of the *South African Mining Journal* all or any of the contributions submitted. All essays reproduced will be paid for at usual rates

Photographic Competition

In connection with the same issue a prize of £2 2s. will be given for the best photograph illustratiug some aspect of: (a) Mining; (b) Metallurgy; (c) Mechanical Engineering; (d) Electrical Engineering. Photos must be of South African interest and must be of topical value. The winning photograph will be published in the Special Anniversary Number of the Journal.

The attention of competitors is directed to the following rules:—

1. Photographs must reach this office not later than March 31st, 1912. They must be addressed "Anniversary Department, *South African Mining Journal*, P.O. Box 963, Johannesburg, Union of South Africa," and marked "Photo Competition" in the top left hand corner.

2. The size and shape of photos submitted is left entirely to competitors.

3. It must be distinctly understood that the decision of the Editor and Editorial Staff of the *South African Mining Journal* and of such judges as may be asked to adjudicate will be final and absolute.

4. In no case can photos submitted in this competition be returned, and the right is reserved to reproduce all or any photos received in any issue of the *South African Mining Journal* without payment.

In all cases in which photos are reproduced in connection with this competition the name of the photographer will be acknowledged.

Robinson G.M.

The Directors' quarterly report for the three months ended the 31st of December, 1911, states:—

Mine.—Development work: Number of feet driven, sunk and risen, exclusive of stopes, 1,396. The reef disclosures were as follows: Main Reef, distance exposed, 320 feet, width, 55 inches, assay value, 4.2 dwts.; Main Reef Leader, distance exposed, 290 feet, width, 26 inches, assay value, 21.4 dwts.; South Reef, distance exposed, 470 feet, width, 19 inches, assay value, 41.2 dwts.

Ore Treatment.—The following were the results obtained from the reduction operations:—Milling: Percentage of waste sorted out, 14.5 per cent.; number of stamps in operation, 250; average running time, 82 days; ore milled, 152,700 tons; milling duty per stamp per 24 hours, 7.4 tons; yield, 53,598 ozs. fine; yield per ton milled, 7.02 dwts. fine. Cyaniding: Tons treated, 154,652; yield, 27,710 ozs. fine; yield per ton treated, 3.58 dwts. fine. Summary of Ore Treatment (on basis of tonnage milled): Milling, total yield, 53,598 ozs. fine, 7.02 dwts. fine per ton; cyaniding, total yield, 27,710 ozs. fine, 3.63 dwts. fine per ton; a total of 81,308 ozs. fine, 10.65 dwts. fine per ton.

Working Expenditure and Revenue.—To mining expenses—Mining, £66,521 4s. 2d.; developing, £3,600 12s. 11d., £69,121 17s. 1d., cost per ton milled, 9s. 1d.; reduction expenses, £34,346 0s. 8d., cost per ton milled, 4s. 6d.; general expenses—mine, £8.655 1s. 1d., cost per ton, 1s. 1d.; head office, £4,246 18s. 2d. cost per ton milled, 7d.; a total cost of £116,379 17s., total cost per ton milled, 15s. 3d.; working profit, £224,953 2s. 3d., cost per ton milled, £1 9s. 5d.; cost £341,332 19s. 3d.; cost per ton milled, £2 4s. 8d. Net profit, £230,659 8s. 6d. Revenue, £230,659 8s. 6d. The 10 per cent. tax on profits due to the Government for the quarter is estimated to amount to £22,841. Reserve gold.—At the 31st of December, 1911, the company had 8.709 ozs. fine gold in reserve. The capital expenditure for the quarter has amounted to £4.238 8s. 8d., exclusive of the proportion of an annuity of £46.576 payable to the Government in respect of mining rights acquired under an area of 5.2776 claims. The twenty-second annual meeting of shareholders will be held in the board room, the Corner House, Johannesburg, on Wednesday, the 13th March, 1912, at 11 a.m., in order to give shareholders ample opportunity of perusing and considering the report and accounts, which it is anticipated will be in the hands of shareholders about the 6th April, before deciding as to the disposal of their proxies. A special circular dealing with this subject has been addressed to shareholders. An interim dividend (No. 39) of 12½ per cent. was declared on the 15th of December, 1911, for the half-year ended the 31st of December, 1911, and will be payable on or about 5th February, 1912, from the head and London offices to shareholders registered on the company's books at 31st December, 1911. Holders of share warrants to bearer will receive payment of Coupon No. 34 attached thereto, on presentation at the London office.

LITERATURE FOR
MINING CAMPS.

MINE READING ROOMS should send direct to London for their Literary Books and Periodicals, or for Technical Books for individual use. List of Rates of Subscription for 1,500 Periodicals; also complete Book Catalogue of 180 pp. post free.

Colonial Librarians' Handbook free on application.

SPECIALITY: Colonial Editions of Fiction.

Remit direct, or through your London Office at choice

ALFRED WILSON, Export Bookseller,
18-19 Gracechurch Street, LONDON, E.C.
(Established 1851.)

THE WEEK IN THE SHAREMARKET.

Steadier—East Rands Fluctuate—Improved Outlook. Difficulties Surmounted.

THE market is ending the week better than it began. The E.R.P.M. meeting appears to have been favourably regarded in London, and the shares are distinctly firmer since the estimates of new capital expenditure became known. Mr. H. O'K. Webber's speech at the annual meeting of the Chamber of Mines is bound to have "a good effect," as it gives a fair and hopeful account of the position and prospects of the industry. The best that can be said of prices is that they show no signs of going any lower, and that they may respond to any improvement in the general condition of the market. The coal crisis in Great Britain is, of course, not lightly to be regarded, and may have serious indirect consequences. Locally, native labour is still coming in well, and the news that the Groups are at last co-operating to obviate competition is one of the best things the Rand has heard for many a long day. The few fluctuations in prices during the week are shown below:—

	Friday, 23rd	Sat., 24th.	Monday, 26th.	Tuesday, 27th.	Wed., 28th.	Thurs. 29th.
African Farms ..	15 6	15 3B	15 4	15 0	14 9	14 9
Aurora West ...	...	7 6B	7 6B	7 6B	..	...
Apex Mines ..	28 6B	...	...	...	...	...
Bantjes Consolidated	24 6	24 3	24 0B	24 3B	24 0	23 9B
Benonis	5 6S	4 9B	4 9B	4 9	4 9B	4 9
Blaauwbosch ...	15 0S	...	15 0S	.	15 0S	..
Bushveld Tins ...	0 9B	0 9B	0 7B	...	0 9S	0 9S
Brakpan Mines ...	53 0S	53 6B	53 6B	54 6B	55 0B	55 6B
British S.A. ...	...	27 6S	...	25 0B	...	...
City and Suburban ...	49 3B	49 0	49 3B	49 6	49 9	49 9
City Deeps	47 0B	47 9S	47 0B	46 6B	47 0B	47 6
Cloverfield Mines ..	4 0B	4 5S	4 3B	4 1	4 1B	4 0B
Cons. Langlaagtes ...	18 6B	18 6	18 6	18 3B	19 0	19 0B
Cons. Main Reefs ...	18 0	17 9B	18 0	17 9	17 9	17 9
Clydesdales	10 0B	...	...	...	...	...
Coronation Freeholds	0 6B	..	0 6B	...	...	...
Con. Investment ..	...	...	20 0B	20 0B	...	...
East Rand Cent. ...	8 0S	7 6B	7 6B	8 0S	...	7 6B
East Rand Coals ...	2 4B	2 4B	2 4B	2 4B	2 4B	2 5
East Rand Deeps ...	1 3B	...	...	...	1 9B	...
East Rand Props. ..	51 6	51 3	52 6	50 9	51 6	50 6
East Rand Deb. ...	...	£89	£90	£90	£90	£91
Eastern Gold Mines	1 9B	1 9	1 9B	1 9B	2 0S	1 9B
Govt. Areas... ...	21 6B	21 6B	21 6B	21 6B	21 9B	22 6
Glencoe (Natal) Colls.	6 4B	6 5B	6 0B	6 5	...	6 5B
Glynn's Lydenburgs	30 0B	30 0B	30 0B	32 0B	...	...
Glencairns	...	...	4 0B	4 0B	..	...
Geldenhuis Deeps ...	...	35 0B	35 0B	..	..	...
Ginsbergs	...	31 0S	...	...	...	..
General Minings ...	...	21 0S	..	...	...	...
Jupiters	10 0B	9 6B	..	...	...	...
Kaalfontein Diamonds	0 6B	0 6B	0 8S	...	...	0 6B
Klerksdorp Props. ...	...	...	...	2 10B	2 11B	2 10B
Knight Centrals ...	13 9B	13 0B	13 3B	13 3B	13 3B	13 0B
Knights Deeps ...	...	42 6B	45 0B	40 0B	35 0B	46 3B
Kleinfontein Estates	31 6S	...	...	32 0S	...	...
Lace Props.	..	...	3 0B	3 0B	3 0B	3 0B
Lydenburg Gold Farm	8 7	8 7B	8 7B	8 6	8 7	8 6
Main Reef Wests ...	27 9	27 0B	27 0B	26 9B	27 0B	...
Modder B's	52 6	52 0B	52 0B	51 8B	52 0	51 9
Midas Deeps ...	1 4	1 3B	1 3	1 2B	1 3B	1 3B
Middelvlei Estates ..	2 0	1 9B	1 10B	2 0B	1 10B	...
Modder Deeps ...	22 6B	22 6B	22 6B	...	23 0S	...
New Eras	6 0S	6 0B	6 2	6 3S	5 9B	5 9B
New Kleinfonteins .	27 0S	27 3	...	27 0B	27 0B	27 6
New Rietfonteins ...	11 3S	10 9B	11 0B	11 0S	11 0B	11 3B
New Heriots ..	90 0B	...	90 0B	90 0B	...	90 0B
New Unifieds ...	19 0S	...	19 0B	19 0S	19 0S	18 6S
New Boksburgs ...	1 6B	1 6B	1 6B	...	...	1 6B
Orange Diamonds ..	1 9B	1 9B	1 9B	1 8B	2 0S	1 8B
Pretoria Cement Co.	54 6	54 6B	54 9	54 0B	55 0S	54 6B
Princess	...	...	...	13 0	...	...
Potchefstroom Est....	1 6B	...	...	...	..	1 6B

B Buyers. S Sellers.

	Friday, 23rd.	Sat., 24th	Monday, 26th.	Tuesday, 27th	Wed., 28th	Thurs. 29th.
Rand Nucleus ..	2 11B	...	2 9B	2 9B	2 9B	2 6B
Randfontein Estates	32 3B	32 0	32 0	31 3	31 6B	31 3B
Rooiberg Minerals	24 9B	25 0B	25 3	24 9	24 6S	25 3
Rand Klip	..	3 6B	3 6B	3 6S	...	3 6B
Ryan Nigels ..	4 1B	...	4 0B	4 0B	4 0B	...
Robinson Deeps ...	49 0S	...	49 6S	...	...	...
Rood. Durban Deeps	30 0S	30 0B	...	..	...	..
Rood. U.M.R. ...	18 9B	...	..	20 0S	...	...
Simmer Deeps ...	3 0B	3 0B	3 0B	2 8S	2 9	2 9
South African Lands	4 3S	4 3B	4 3B	4 1B	4 1B	4 1B
S. Randfontein Deeps	...	4 3	4 2	4 2	...	4 0
Sub Nigels	6 3S	6 3S	6 3B	7 0S	6 0B	6 9S
S. A. Breweries ...	38 6	38 6B	38 6B	38 6B	38 6S	38 6B
Springs Mines ...	8 6B	8 0B	...	...	...	6S
Swaziland Tins	...	...	42 0S	...	...	...
Trans. G.M. Estates	41 0B	40 6S	41 3S	41 6	41 3S	41 6S
Temple Tins	3 1B	3 1S	3 1S	3 1B	3 1S	3 0S
Trans. Coal Trusts .	35 3B	..	...	35 6S	35 9B	36 0B
Van Ryn Deeps ...	7 3B	..	7 3	7 1B	7 1B	7 0B
Village Deeps ...	41 0B	40 6B	41 0B	41 0	40 3	40 0B
Vogel. Cons. Deeps...	...	..	1 6B	1 6S	...	1 11
Witbank Collieries...	44 0B	...	45 0S	...	45 0	45 0S
Wolhuters	22 6	22 9B	22 9B	22 9B	22 6B	22 6B
Wit. Deeps ...	46 3B	45 0B	46 0S	46 0B	44 0B	...
West Rand Con. ...	...	...	6 0S	...	...	...
Zaaiplaats ..	60 0	57 6S	58 0	57 0	55 0	52 6B

B Buyers S Sellers.

INVESTORS' DIARY.

The following company meetings have been announced:—

March 6.—Crown Mines.
March 7.—Rose Deep.
March 8.—National Bank (Pretoria); Geldenhuis Deep; Wit Deep; Cloverfield Mines.
March 12.—Durban Rood. Deep.
March 13.—Robinson G.M.
March 14.—Bantjes Con. Mines.
March 15.—Village Deep.
March 20.—City Deep; Lancaster West; May Consolidated; Anglo-French Coal Estates.
March 21.—Ferreira G.M.
March 22.—Modder "B"; Vogel Cons. Deep; Knight Central.
March 26.—Cassel Coal Co.
March 27.—Rand Mines; Modder Deep Levels; Princess Estate; Geduld Prop.; S.A. Gold Mines.
March 28.—East Rand Deep.
March 29.—Simmer Deep; Jupiter.
April 12.—Transvaal Consolidated Lands.
April 17.—South Randfontein Deep.
April 25.—Wit. Deep; Knight Central; Wolhuter; Treasury; Consolidated Main Reef; Main Reef West; Witbank Colliery; Vogelstruis Consolidated Deep; Cloverfield (Extraordinary General Meetings).
April 30.—New Era; Springs Mines; Brakpan Mines, Transvaal Coal Trust.
May 8.—Roberts Victor Diamonds.
May 17.—Wit. Deep; Knight Central; Wolhuter; Treasury; Consolidated Main Reef; Main Reef West; Witbank Colliery; Vogelstruis Consolidated Deep (Extraordinary General Meetings).
May 22.—Apex Mines; New Kleinfontein.
May 23.—Benoni Consolidated.

The following tenders have been accepted by the South African Railways:—Teak logs and planks, Jac. Loopuyt, 9s. 4.8d. per cubic foot; grain bags (2½lb. bags), Liberman and Duirski, £8 5s. 7½d. per bale; grain bags (2½lb. bags), W. Dunn and Co., £8 4s. 2d. per bale; coal bags (2¾lb), The Gourock Ropework Export Co., Ltd., £9 5s. per bale; coal bags (2¾lb.), W. Dunn and Co., £8 16s. 10d. per bale; Sugar pockets, Lieberman and Buirski, £6 12s. 3d. per bale. Mealie meal for Natal and Orange Free State:—4,200 muids. The Natal Mill and Elevator Co., 12s. 4d. per muid; 580 muids, McDonald and Forbes, 11s. 8d. per muid; 730 muids, L. H. S. Jones, 11s. 9d. per muid; 1,000 muids, Transvaal Milling Co., 10s. 9d. per muid; 700 muids, Transvaal Milling Co., 11s. per muid; 1,270 muids, Vereeniging Milling Co., 11s. 1d per muid.

Engineering Notes and News.

The Turbine Pump.

An interesting paper was read by Dr. Hopkinson and Mr. A. E. L. Charlton at a recent meeting of the Institution of Mechanical Engineers, entitled "The Evolution and Present Development of the Turbine Pump." In the course of this paper, the authors stated:

> To-day the turbine principle seems to be the accepted ideal of almost all primary machines. It would appear that the age of the reciprocating engine, for the various duties of mechanical engineering, is passing, and that the rotary engine of the turbine type is steadily taking its place. In that of steam prime-movers it has, perhaps already taken the lead over the reciprocating type, and the engine of Watt must now be relegated to second place. In other fields and duties its progress to date is so great as to warrant the surmise that at no distant time a similar comparison of precedence will be made. In no domain, perhaps, has the turbine rotary principle achieved greater success in the last few years than that of high-lift pumping, though the realisation of its possibilities for such duties, by some, is perhaps as old or older than the steam turbine itself. Still, its general acceptance as correct engineering practice is only a matter of the last five years. At the present time the use of the turbine pump has become so extended that it is difficult to find services to which it cannot be advantageously applied. As a description of the commercial application of the steam turbine is a history of the Parsons machine, so that of the turbine pump can be adequatently portrayed by an account of the evolution of the Osborne Reynolds pump. The rotary machine for raising water in the form of a centrifugal pump is a very old contrivance, and was the forerunner of pumps of the turbine type. At the beginning of the eighteenth century, Denis Papin, the French physician and physicist, afterwards a Fellow of the Royal Society, communicating to the society a paper in which he describes how "being busy for a coal-mine, which has been left off, because of the impurity of the air," he had devised improvements in the Hessian bellows with a view to applying them both to wind and water. His improved apparatus consisted of radial wings caused to resolve about an axis in a cylindrical chamber of which the portion external to the wheel was of a spiral shape. His drawings show clearly the volute casing the modern centrifugal pump. Papin had no means of driving his fan or pump other than by hand-power, and more than a century elapsed before his ideas were applied in practice.

A New Dust Collector.

Yet another dust-collecting device is announced. Two mechanics in the employ of De Beers, namely, Messrs. J. W. Eykelenboon and A. C. Coles, have invented and patented this device for collecting the dust produced by rock drilling and preventing its diffusion into the atmosphere. The contrivance has been tried at De Beers under working conditions, and has answered the tests. The apparatus consists chiefly of a steel casing, small in diameter and cylindrical in form, and weighing about five pounds. This is meant to surround the drill at the working face. It opens in two—the halves being connected by hinges—so that the drill may easily be changed or adjusted. Each half of the casing has a dust collecting chamber, which can be fitted either with a lid or a removable bag. The device can, therefore be used no matter what may be the angle at which the drill is being worked. Running round the front of the casing is a groove into which rubber is fitted for the purpose of pressing against the rock face, and thus preventing any escape of dust between the rock and the casing. In consequence of this, the dust, it is claimed, passes back into the cylinder and falls into the dust collecting chamber. The casing is supported on telescopic piping, which is fastened to the cradle of the drilling machine by means of a clamp. The outer piping is perforated so that by the use of a pin the inner tubing can be adjusted to the length of the drill in operation.

"SISKOL"

STOPE-DRILLS.
HAMMER-DRILLS.
COAL-CUTTERS.
AIR-COMPRESSORS.

We are always willing to Send Our DRILLS Out on Trial.

THIS SPEAKS FOR ITSELF.

WRITE OR PHONE US.

International Channelling Machines, Ltd.,
(INCORPORATED IN ENGLAND.)
2 & 3, TRUST BUILDINGS, JOHANNESBURG.

Phone 2643. **Telegrams "SISKOL."** **P.O. Box 1382.**

THE STANDARD ANTI-FRICTION METAL OF THE WORLD
MAGNOLIA METAL
FLOWER BRAND. FLOWER BRAND.
TRADE MARK. TRADE MARK.

FACSIMILE OF INGOT.
TO PREVENT IMPOSITION SPECIFY "FLOWER BRAND."
THE MAGNOLIA ANTI-FRICTION METAL CO. OF GREAT BRITAIN LTD
49, QUEEN VICTORIA STREET, LONDON, E.C.
Sole Agents for South Africa: MESSRS. FRASER & CHALMERS, LTD JOHANNESBURG, BULUWAYO AND SALISBURY.
BEARING METALS TO SUIT ALL CONDITIONS SUPPLIED. CATALOGUE SENT POST FREE.

Tramway Extension.

The Johannesburg Municipal Council has decided that the proposed extension from Fordsburg line along Hanover Street to the Main Reef Road, and along the Main Reef Road to a point 150 yards west of Church Street near the Crown Reef Store be proceeded with, and that an expenditure of £9,852 be sanctioned for this purpose.

Premier Mine Plant.

During the year 1911 additions have been made to the electrical hauling plant in the Premier mine, a number of new motors having been installed. The additional searchlights referred to in the last report have also been erected. An engine of 1,000 h.p. is now under order for driving the No. III. and IV. haulages when the new incline is completed, and provision is being made to run both the washing and crushing plants electrically, should it be necessary at any time to stop the main steam engines for renewals or repairs. The recovery plant is being extended by the addition of two new tube mills. Additions have also been made to the workshop tools during the past year.

Rand Mines Power Supply Co.

FAILURE OF LARGE TRANSFORMERS.

The adjourned third ordinary general meeting of the Rand Mines Power Supply Co., Ltd., was held last week. The Hon. W. L. Bagot, D.S.O., presided. The Chairman said: The directors' report and accounts are now before the meeting, and in the absence of your chairman, Mr. Chaplin, who is engaged in Capetown on his Parliamentary duties, it devolves on me to move their adoption. Before doing so I desire to add a few words to the information contained in the report and accounts in regard to the progress of your undertaking. As you will observe from the accounts, your company earned during the last eight months of its financial year a profit of £32,710 4s. 2d. after providing for interest on loan during the revenue earning period. In view of the fact that the whole of this period was occupied in the starting up of huge items of generating plant, I think you will agree that the financial results of operation may be regarded as highly satisfactory. In starting up a scheme of such magnitude it is only to be expected that initial difficulties must be anticipated, and at Rosherville various minor troubles had to be overcome. I am pleased to tell you, however, that during the financial year only one difficulty of any importance was experienced, viz.: the failure of certain large transformers, which our engineers inform us was entirely due to defective workmanship on the electrical windings. This failure has handicapped the company's operations considerably. The contractors have taken the matter in hand energetically, and there is every reason to believe that all risk of a recurrence will be avoided by the alterations now being carried out. Apart from this trouble on transformers the plant generally has given an excellent account of itself, particularly the compressed air scheme. This scheme, which is novel and represents a very large step in advance of anything so far attempted in other parts of the world, has proved an unqualified success. The operation of the large rotary compressors has been quite satisfactory although these machines are very much larger than any plant of similar type previously constructed. The erection of the new generating station at Vereeniging was unavoidably delayed pending the issue of a licence to the company under the terms of the Power Act, 1910, which licence was not granted until November, 1910. These works are now, however, well in hand, and unless there should be delay in the delivery of material it is anticipated that the two first turbo generators in this station will be in service shortly after the middle of 1912. Two additional generating sets of a similar capacity to those at Rosherville are under construction for this station, and this plant will enable the company to meet the increased supply demanded by its consumers.

T.G.M. and Glynn's Power Supply.

The Transvaal Gold Mining Estates and Glynn's Lydenburg have received licences to supply power, under the Power Act (Transvaal), 1910, in the defined areas situated in the Pilgrim's Rest district. The Transvaal Gold Mining Estates is limited to 5,000,000 units in any one year, and the Glynn's Lydenburg Company to 1,000,000 units. The T.G.M. is obliged to supply power within the area to the maximum extent of 15 per cent. of the power generated by it, and may agree to supply further power. In the case of the T.G.M.'s supply, the price is to be one penny per k.w. hour, and in that of Glynn's 0.9d. per hour. The right is reserved of shutting down the generating plant for cleaning and overhauling for a specified number of hours in each month, and in the event of shortage the company has first call on the supply. The Government has the right of expropriation in the event of the T.G.M. Company not carrying out its obligations.

HIC TRADE MARK.
H. INCLEDON & Co., Ltd.
(Head Office, Birmingham: Registered in England.)
Telephones 1911 and 1912,
P.O. Box 3620,
JOHANNESBURG.
ALL SIZES OF
PIPING, AND FITTINGS,
VALVES, Etc.
FROM ¼" TO 18" KEPT IN STOCK.

Progress of Printing Machinery.

A paper of more than ordinary interest was read by Mr. A. E. Blevins, manager of the *Leader* Printing Works, before a meeting last Saturday night of members of the South African Institute of Engineers. It was entitled "The Evolution of Printing and Type-setting Machinery—1400 to 1912," and it was illustrated with much effect by a large number of lantern slides that vividly brought before the audience the vast improvements in the art of printing, as, for instance, the contrast between the ancient hand-presses and the modern newspaper printing machine, and the vast advance in the manufacture of type. Mr. F. Davis, president of the Institution, gave the lecturer a hearty welcome, and spoke of the exceptional interest that was attached to the address.

Rand Water Supply.

DESCRIPTION OF PLANT AND MACHINERY.

In connection with the discussion on the Rand water supply, a paper read by Mr. D. C. Leitch before the Institution of Civil Engineers recently will be of interest. The works described in this paper serve an area of 365 square miles, with a population of 139,000 white and 226.000 coloured inhabitants. The scheme now described includes reservoirs and distributing mains on the Rand, and a rising main from Zwartkopjes, where there is a central pumping station. At this station there is electric generating plant, and main pumping engines, the latter delivering the water on the Rand, a single lift of over 820 ft. The former provides current to actuate the pumps at the wells in the vicinity, which include nine pairs of shafts and boreholes in an area of about 50 square miles; these pumps rise the water from underground, and deliver it at the pumping station at Zwartkopjes. The supply is obtained from fifteen shafts and five boreholes, sunk, with two exceptions, in pairs, the units forming a pair 110 ft. apart. In most cases boreholes were sunk in the first instance from the level of standing water, and sometimes yielded an adequate supply; in other cases a shaft was sunk and headings were driven, using the permanent pumping plant to keep down the water. The total supply available is about $7\frac{1}{3}$ million gallons daily. Headings were driven by native labour to intersect water-bearing fissures, where these were not met with in shafts, and all boreholes were torpedoed to improve the yield of water.

The central pumping station at Zwartkopjes contains the steam-driven pumps, boilers, and superheaters. There are four sets of main triple-expansion pumping-engines, which are of the vertical inverted type, driving the pump-plungers direct off crossheads. The maximum capacity of each engine is 100,000 gallons per hour, against 960 ft. head. There are three high-speed electric generating sets, each of 360 kilowatts, supplying three-phase current at 3,300 volts. On trial, with a superheat of 500 degs. F., the main engines consumed 11.25 lbs. of steam per net horse-power hour, a record performance; in ordinary working this consumption is increased to about 13 lbs. Current is delivered to motors at the wells at the full voltage of 3.300 to 3,000, by overhead transmission lines of stranded copper, carried on timber cross-arms and steel poles, which also carry telephone lines. The well pumps are of the bucket-and-plunger type, driven by rods and bell-cranks from a head-gear and motor placed centrally between each pair of pumps. The fly-wheels, on crank-shafts of the head-gear, weigh about 4 tons each, and a considerable saving in cost was effected by constructing them of reinforced concrete from material on the spot. The capacity of the pumps ranges from 45.000 to 80,000 gallons per hour. These electric motors are connected to the head-gear by double-reduction spur-gearing. Six of the motors are of 50 b.h.p. and four of 75 b.h.p. each; the overall efficiency of motor, gear, and pumps is about 70 per cent.

The water pumped from Zwartkopjes to the summit at Turffontein Nek gravitates to the pumping-station at Village Main Reef. Here, up to 100,000 gallons per hour can be pumped to Yeoville reservoir, against a head of 270 ft.; of the remainder, part is taken by mining consumers before reaching Village Main Reef, and the balance is distributed east and west along the Rand. To accelerate the delivery eastward, steam-pumping plant. capable of delivering 200.000 gallons hourly against a head of 80 ft., is provided. The pumping engines are of the Worthington duplex, triple-expansion type. with pneumatic compensators, driving the high-lift pumps direct off the crossheads and the low-lift pumps off the tail rods of the high pressure plungers; the latter pumps can be readily connected or disconnected. There are also several small electrically-driven pumping stations, drawing supplies, in all about 500,000 gallons daily, from wells. The rising main from Zwartkopjes is constructed of 27-in. and 29-in. welded steel pipes, with both riveted and Kimberley collar joints. As the maximum head may reach 960 ft., the lower portion of the pipe is strengthened by steel-wire binding. The length from Zwartkopjes to the summit is about $6\frac{1}{2}$ miles, divided into four sections by influx valves of special construction for high pressures. Expansion-joints are provided, and the pipes are protected by a bituminous coating; precautions are also taken against sand cutting. The leakage amounts to only 150 gallons per hour. The distribution system is then described, comprising 133 miles of steel mains, averaging $14\frac{1}{2}$ ins. in diameter. Provision is made against subsidence over mine-workings. The storage reservoirs on the Rand have a total capacity of about 10,000,000 gallons. In addition, there are settling tanks at Zwartkopjes, with a total capacity of 6,070,000 gallons, and also two clear water tanks, each containing 75,000 gallons. These tanks are all uncovered, and are constructed of reinforced concrete. The whole of the water delivered to consumers is measured. The average hardness of the Zwartkopjes supply is about 19 parts per 100,000; this is reduced to 14 parts by the addition of hydrate of lime, a solution of which is added to the water entering the settling tanks from the wells. As much as two parts of iron per million is found in the water from some of the wells which afford the most copious yield. Growth of weed is prevented in these cases by adding 1 part in 3,000,000 of copper sulphate; while the oxide, formed as soon as the water is aerated, is removed by passage through a cinder filter. Owing to the occasional presence in summer of *B. Coli*, probably due to insect sources, it is desirable to have means of sterilising the water. This is done by the addition of $7\frac{1}{2}$ to 15 lbs. of chloride of lime per 1,000,000 gallons. The works described were carried out mainly by local contractors, under the direction of the author, material being purchased in England under separate contracts. The total cost was about £900,000. Particulars are given of the working of the plant and the cost of dealing with the water. Thus, during the first half of 1910, the difference between the water pumped and water sold was about 6.2 per cent. on a total of 172,000,000 gallons per month, and with about 10,250,000 gallons in circulation, in mains and reservoirs. During the second half of 1910 the average demand rose to 235,000.000 gallons per month, and the cost of pumping and delivering water to the consumers was $7\frac{1}{2}$d. per 1,000 gallons. Adding to this fixed charges on Rand Water Stock—paid by direct contribution from the municipalities and producing mines—which amounted to 1s. 4.84d., the total cost of water was 2s. 0.34d. per 1,000 gallons.

New Patents.

71. Gustavus Adolphus Sheeley.—Improvements in shaft and track rollers for supporting hauling ropes and the like.
72. Gustavus Adolphus Sheeley.—Improvements in elastic or resilient wheels.
73. William John Hosking Ivey and William Hughes.—Automatic railway gauge and track leveller.
74. Henry James Rees and Henry Livingstone Sulman.—Improvements in or relating to the deposition of metallic salts from solutions containing them.
75. William Bullock.—Improvements in stamp mills.
76. John Elford Porter and William Wallace Thomas.—Load-carrier.
77. Walter Augustus Clive and William Harrison.—Safety catch for skips and the like.
78. Frederick Walter Bawden.—Improved method of cool storage.
79. Edwin Freeman.—Combination jet and sprays.
80. Alexander Purser.—Improvements in or relating to valves.
81. Charles Schenck Bradley.—Ore concentration system.
82. Hugh McMenamin.—Improvements in the linings of tube mills and the like.
83. James West Scorer.—A new or improved device for use in fixing shoes to the heads of stamps.

THE STOBIE PATENT RESPIRATOR

Only weighs half an ounce. Cheapest, most effective and comfortable in the market.

Order wholesale from Stobie Company (Ltd.), Box 2321, Johannesburg, or retail locally through your chemist.

Miners' Phthisis prevented by the use of Stobie Respirator.

HENRY R. MERTON & Co., Ltd.

2, METAL EXCHANGE BUILDINGS.
LEADENHALL AVENUE, LONDON, E.C.
England.

Cable Address: "MERTON," London.

SELLERS OF

Copper, Tin, Lead, Spelter, Antimony, Nickel, Aluminium, Quicksilver, Sulphate of Copper, Zinc-dust.

South African Representatives:
Messrs. PARRY, LEON & Co.,
Mercantile Buildings, Simmonds Street,
P.O. Box 1101. JOHANNESBURG.

Finance, Commerce, and Industries.

African Life Assurance. The African Life Assurance Society is to be congratulated on another excellent year. At the seventh annual general meeting held last week, Mr. Richard Baumann, who presided, stated that proposals for new business considered last year numbered 4,336, and involved £1,691,075; 1,078 proposals, involving £435,225, were declined, postponed, or not proceeded with; 3,258 proposals, involving £1,255,850 being accepted. It was interesting to compare these figures with those for the year 1910. During that period 2,886 proposals, involving £1,255,850, were received, of which 520, involving £253,975, were declined, and 2,346, involving £1,001,875, were accepted. The claims which matured last year were only 43 per cent. of the expectancy on which the society's premium tables were based. The year, indeed, was a record one for the society.

* * * *

Coal Contracts. The coal supplies for the South African Railways purposes for Natal and the Southern Free State and for Cape Town, for the year 1912, have been allocated to the following collieries:—Supplies for Natal and Southern Free State: Ramsay, 10,500 tons; Ballengich, 25,000 tons; Elandslaagte, 20,000 tons; Natal Steam, 17,000 tons; Natal Cambrian, 21,600 tons; St. George's, 30,000 tons; Burnside, 42,000 tons; Natal Navigation, 30,000 tons; Hlobane, 161,000 tons; Utrecht, 28,000 tons—total, 353,600 tons. For Cape Town: Burnside, 30,000 tons; Witbank, 54,000 tons—total, 84,000 tons. The above supplies were allotted on competitive tenders. The Cape supplies will be conveyed overland. In the event of a coal strike in England, it is understood that the South African Railway Administration may be called upon to carry much larger quantities of coal by rail to meet shipping requirements.

* * * *

Railway Taxation. The Johannesburg Chamber of Commerce also points out that the economic conditions in this Province, characterised as they are by an excessively high cost of living and consequent handicapping of industrial development, have been constantly urged for years past, and though the disadvantages under which trade and industries suffer have in theory been recognised by all, yet up to the present no relief has been granted by the Union Government. It is further to be pointed out that the profits made in the Coast Provinces were almost wholly due to the main lines, and were very largely earned on traffic for the interior—therefore to that extent representing taxation on this community. The Chamber desires also in this connection to protest against profits made on the railage of goods to the interior being utilised for wiping out the deficits in the harbour accounts. In the Estimates for the closing financial year a sum of no less than £274,000 was thus applied, and it is observed that in the coming year the harbour expenditure is to be increased by over £100,000. Hitherto the whole of the deficit has been made up by what is, in fact, a tax on the people inland, while those at the coast are freed from any contribution. This matter was represented by the Chamber to the Ports Enquiry Committee, and it was urged that the port charges should be amended so as to make the harbours as a whole self-supporting, and to impose the charges on all importers alike, whether domiciled up-country or at the coast. It was further urged that Government departments should be debited with the ordinary port charges on goods imported by them, so that the taxation should fall on the whole poulation of the Union. Should a sum of apparently over £300,000 be charged against railway earnings—and therefore against inland consumers only—in the coming financial year, a great injustice will result. The Chamber feels that, in view of the foregoing representations, the Government will take immediate steps towards lightening the inequitable taxation imposed on this community. In connection with any reductions to be consequently made it would submit: (a) That reductions in rates should apply to foodstuffs, building material, raw materials for manufacture, and industrial supplies—particularly for commodities of such wide utility as coal, in the carriage of which it is evident an exorbitant profit is now being made. (b) Attention is called to the recommendations of the Association of Chambers of Commerce, viz.: This Congress is of opinion that in order effectively to carry out the principles of Section 127 of the Act of Union, the adoption of the system of "Basing Points Rates" would be the most suitable method, and that the Railway Administration should establish it without delay.

* * * *

A New Industry for South Africa. Projects for new industries are not infrequently before the South African public; in fact, during the last two or three years the tendency toward the development of local manufactures has been most marked, but a fact which has prevented a good many proposals from taking concrete form has been that though South Africa has many wants she does not in view of our present comparatively small population require a very large quantity of any one manufacture, except articles in very general use, and then too often the raw materials for the manufacture are not obtainable in the sub-Continent, and the cost of import makes the proposition impracticable. One proposed industry, which it is highly probable will in the near future be started in Capetown has, however, neither of these disadvantages, for there is a general demand for it by the agricultural community, and the raw material is readily obtainable in Cape Colony, Transvaal, and Natal; this is the manufacture of tobacco sheep dips, nicotine and insecticides. It cannot, of course, be described as a primary industry, but the demand for these dips in South Africa is an ever increasing one, and at present exceeds the supply owing to the enormous demand for these products in other parts of the world. In Capetown, where sheep farming is never engaged in, it is difficult to appreciate the demand there is for this form of dip, but official figures show that the sales amount annually to about £50,000; so it will be appreciated that the demand is a very considerable one.

* * * *

Rhodesia Tobacco. The progress of the Rhodesian tobacco industry is illustrated by the fact that the sales have jumped from 20,000 lbs. to 411,000 lbs. since 1906. With the exception of the maize industry, South Africa can show nothing to equal such wonderful progress in six years, comments the Rhodesian *Journal*. What makes the expansion of so much importance is the fact that the tobacco is the most sought after in South Africa, it being the bright yellow leaf from which the popular Virginia cigarette is made. Rhodesia is fortunate in having almost a monopoly of this particular class of leaf, the rich soil of Mashonaland possessing just the peculiar characteristics required by the plant. That in itself is an asset of enormous value, and the Mashonaland growers have taken advantage of it by doing their utmost year by year to improve the quality, so that Rhodesia's supremacy may be still further enhanced. It is not generally realised that Rhodesia produces a more valuable Virginian tobacco than the famous tobacco belt of the Southern States of North America. There the tobacco leaf sells at 4d. to 6d. per lb. In Rhodesia the average of the auction sales was 1s. 2¾d., while this year a particularly good bale reached the record price of 3s. 4d. per lb., while prices ranging from 2s. to 2s. 10d. were quite common. In addition, 46,000 lbs. of Turkish tobacco leaf was sold, averaging 2s. 1½d. per lb. The bulk of Rhodesian grown tobacco is consumed in South Africa, but there is no question that before long Rhodesia will enter larger markets.

Our Twenty-First Birthday.

Unique Advertising Opportunities.

This year the "SOUTH AFRICAN MINING JOURNAL" celebrates its Twenty-First Birthday.

To mark the occasion a SPECIAL ANNIVERSARY ISSUE which will deal with every conceivable aspect of Mining, Metallurgy, Finance, Engineering, Railways, Harbours and Subsidiary Industries throughout the Sub-continent, will be issued in JUNE next.

The Leading Mining and Financial Men of Europe, Africa and America will contribute to this Special Number, which will Establish a RECORD in South African Illustrated Journalism.

WORLD-WIDE CIRCULATION IS ASSURED.

Do You Wish to Push Your Business?

Apply at once for Advertisement Rates to the

Manager, "S.A. Mining Journal,"

Box 418. **Telephone 913.**

119-126, Exploration Buildings, Johannesburg.

THE ADVERTISING SPACE IS LIMITED AND EARLY APPLICATION IS ESSENTIAL.

New Land Bank. A *Gazette Extraordinary* was published last week containing the text of a Bill to establish a land and agricultural bank for the Union. The measure provides for the absorption of the existing land banks in the Transvaal, Orange Free State, and Natal. The capital of the new bank will be six millions, and will consist of the capital of the old banks, together with such further moneys as Parliament may authorise. The operations of the Land Bank will be controlled by a Board, consisting of a general manager (who is to be an officer in the public service, appointed by Government) and five other members nominated by Government, and not in its service. The establishment of Advisory Boards is also contemplated. The Government may, as it deems necessary, appoint an Advisory Board for any part of the Union, such Boards to consist of three persons, one of whom shall be an officer in the public service. Fees and travelling expenses are fixed for members, other than Civil Service members.

* * * *

British Trade with South Africa. The following statement is supplied by the British Trade Commissioner's Office, Cape Town, covering the external trade of the United Kingdom in 1911, with special reference to British South Africa. The "Accounts relating to the Trade and Navigation of the United Kingdom," recently issued for the month and twelve months ended 31st December last, show that in spite of labour disturbances throughout the year and the interruption of business during the Coronation holidays, the values of merchandise imported into and exported from the United Kingdom in 1911 exceeded those of 1910—the highest previously recorded. Imports were valued at 690·6 millions, an increase of 2¼ millions, or 0·3 per cent.; exports of United Kingdom produce at 454·3 millions, an increase of 24 millions, or 5·5 per cent., and re-exports at 102·7 millions, a decrease of slightly over £1,000,000, or 1 per cent. The rise of 2¼ millions in the value of imports is the net result of increases of 6½ millions in "Food, Drink and Tobacco," and 8¾ millions in "Articles wholly or mainly manufactured," and a decrease of 13 millions in "Raw materials and articles mainly manufactured." The decrease in the last-mentioned group is, however, more than accounted for by the fall in the prices of raw cotton and rubber. The value of the imports of these commodities, taken altogether, was less in 1911 than in 1910 by some 8¼ millions, but the quantities of both imported were greater in 1911, and had the prices of 1910 been maintained in respect of these two commodities the total value of the imports of the group would have shown an increase of about £4,500,000, instead of a decrease of £13,000,000. The falling-off in the value of re-exports is also attributable to the reduced price of rubber. The increase in the value of exports of United Kingdom produce was largely due to the exportation, in increased quantities and at higher prices, of yarn and manufactures of cotton, the total value of these being greater by about £14,000,000 in 1911 than in 1910. There were also increases exceeding £1,500,000 under the heads of "Machinery" and "Chemicals, Drugs, Dyes and Colours," and one of over £1,000,000 under the head of "Apparel." The foregoing remarks relate to merchandise only; the figures quoted do not include imports and exports of gold and silver. The total values of these (including bullion and specie) in 1911 were as follows: Imports £63,000,000, exports £57,000,000, net imports £6,000,000. The values of the imports from, and of the exports and re-exports to British South Africa in 1910 and 1911 were as follows (values of merchandise only, exclusive of gold and diamonds):—Imports in 1910, £10,404,000; in 1911, £10,013,000; exports of United Kingdom produce in 1910, £20,246,000; in 1911, £21,284,000; re-exports in 1910, £1,789,000; in 1911, £1,831,000. There was thus, in 1911, a small decrease in imports, accompanied by an increase of £1,000,000 in exports and a small increase in re-exports. Among the principal articles were the following:—Imports from British South Africa in 1911: Wool (sheep's or lambs'), £3,812,000; mohair (Angora goats' hair), £807,000; skins (goats' or sheep's), £962,000; feathers and down, ornamental, £1,919,000. Exports of United Kingdom produce to British South Africa: Iron and steel and manufactures thereof (so far as distinguished in the monthly accounts), £2,174,000; machinery (so far as distinguished), £1,380,000; cotton piece goods, £1,283,000; apparel, £3,249,000; boots and shoes (of leather), £1,054,000. The value of the gold bullion imported in 1911 from British South Africa was over £37,000,000, as against about £34,000,000 in 1910.

* * * *

Coast Rebates. The resolution adopted at the last general meeting of the Cape Town Chamber of Commerce in regard to rebates of freight on the coastwise trade has been communicated to Chambers of Commerce at other coast ports, and replies have been received as follows:—The Port Elizabeth Chamber of Commerce is of opinion that the present time is not opportune to deal with the matter. The East London Chamber intimates that in view of the arrangements pending with regard to the mail contract it would be advisable for the matter to remain in abeyance until a statement has been made in Parliament by the Government with regard to the mail contract and the freight question generally. The Durban Chamber states that it is not disposed to deal with a part only of the question of deferred rebates of freight, and proposes that the Chamber should reserve expression of its opinion until the whole subject comes up for discussion.

* * * *

S.A. Land Banks. The Reports have just been issued in the form of Blue Books, for the period ending 31st March, 1911, of the Transvaal Land and Agricultural Bank and the O.F.S. Land and Agricultural Loan Fund in connection with which some interesting statistics are evolved. The reports of the Transvaal Land Bank state that this bank was established on 4th November, 1907, and during the three and a half years it has been running—up to the close of the period under review—6,376 applications were received for loans amounting to £2,750,000, over £2,100,000 of which were approved, but only £1,743,300 taken advantage of by the applicants. During the last statistical period 936 applications were received in respect of which loans to the value of £285,500 were approved of by the Board, but only loans amounting to £255,400 were accepted by the applicants, of which £250,600 only was paid out, making a total since the opening of the bank of £1,623,000. The average amount of the loans paid out during the period was £331. The chief purpose for which these loans were made was to pay off existing liabilities on land, and a large proportion was asked for the purchase of additional land. The purchase of stock, plant and agricultural requirements generally, was the desideration in a large number of cases, and last and least the payment of costs incidental to the sub-division of land. The repayments during the period amounted to £113,800, or since the opening of the Bank, £238,000.

* * * *

The Natal Sugar Industry. The Natal sugar industry is making rapid headway, particularly in the Zululand coast-belt. A large acreage of ground is already under cultivation, and this is being rapidly increased year by year. Milling facilities are keeping pace with the output of cane as additional crushing plant is being erected. The season now closing has been a very favourable one, crops having been excellent and prices in favour of planters. The production is now more than double what it was five years ago. The 1911-12 crop has been estimated at 92,000 tons (value, say, £1,250,000), as compared with 82,000 tons in 1910-11, and 63,000 tons in 1909-10. It is early yet to forecast the 1912-13 crop as crushing will not commence until about May next; but, given a continuance of favourable weather conditions, a yield of about 112,000 tons is expected. The South African consumption of sugar may be placed in round figures at 105,000 tons, so that Natal is now within measureable distance of an export trade, which means that considerably altered circumstances will have to be faced in the general conditions governing the industry. This fact is realised, and is receiving the serious attention of those interested.

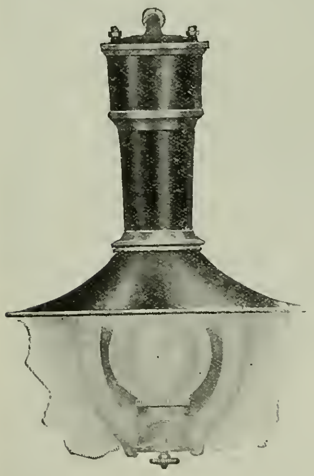
Railway Profits as Indirect Taxation.

The following memorandum prepared by the executive of the Johannesburg Chamber of Commerce has been submitted to the Minister of Railways and Harbours:—In view of the announcement made by the Government of an impending reduction in railway rates, the Johannesburg Chamber of Commerce desires to call attention to some of the important considerations affecting the question. The Railway Estimates for 1911-12 showed an anticipated credit balance of £1,433,108. Taking the published revenue account for the first six months of the year, a balance was shown of £1,441,712. Assuming a similar ratio of profit is made during the second six months, this is equal to £2,883,000 for the full year. Deducting from this amount sums of £550,000 and £70,000 earmarked for betterment and rates reserve fund respectively, this would indicate a probable net credit balance for the year of over £2,000,000. Under Section 127 of the South Africa Act the surpluses of the railways have to be extinguished by May 30, 1914. It is therefore assumed that the Administration will effect reductions in rates to the extent of £1,000,000 during each of the ensuing two years. The Chamber, in dealing with this matter, considers that the equitable course to be pursued should be that of affording relief on those sections of the railways on which the principal profits are being earned —especially bearing in mind the definite terms of the Act of Union providing for "the promotion by means of cheap transport of the settlement of an agricultural and industrial population in the inland portions of all Provinces of the Union." In order to arrive at such information the returns on pages 109-10 and 116-17 of the General Manager's report for 1910 were taken, and the differences between the earnings and expenditure per mile of each line were multiplied by the mileage in each case. Whereas in the Transvaal the gross profit per mile was £1,681, it was in Natal £941, the Free State £563, the Cape Colony £303—with an average for the whole system of £778. Moreover, it has to be borne in mind that since 1910 (the period of these figures) reductions in rates were made on the Cape Colony systems of about £400,000 per annum, so that the difference in the small gross profit on the Cape sections as compared with the gross profits on the other sections of the railways (and particularly the Transvaal) is probably greater than the above figures indicate. Even if there were no other considerations to be taken into account, it is evident that the claims of the inland districts, and of the Transvaal in particular, to substantial relief are, in the light of the foregoing, overwhelming.

* * * *

Natal Industries.

The exceedingly poor mealie crop in Natal last year accounts for the heavy shortage in the export of this cereal, the figures being just under half a million bags, as against a million and a quarter in 1910, and one million in 1909. For the whole of South Africa during the same periods the exports of maize totalled approximately one million, one and three-quarter million, and one and a half million bags respectively. As the output from the Transvaal and Orange Free State is increasing these figures show that at present less than half of the South African export is shipped via Durban. Natal has become the largest producer of wattle bark in the world; the exports for last year amounted to 50,000 tons, as compared with 45,000 in the preceding twelve months. The wool industry has fluctuated but little, the exports via Durban for 1910-1911 being 97,765 bales, as against 97,067 bales in 1909-1910. The season in this Province has again been very satisfactory. The agricultural outlook is encouraging. In view of the greater control over East Coast fever, which has been made practicable by the dipping process, re-stocking of farms with cattle is satisfactorily proceeding. Another satisfactory feature is the growing extension of the principle of co-operation (which has done so much for agriculture in other countries) amongst the Natal farming community.



Sole Agents—

WESTERN ELECTRIC CO., LTD.

(Incorporated in England),

Standard Bank Chambers,

JOHANNESBURG.

Box 1571. 'Phone 2118.

Telegrams: "Microphone."

JANDUS

REGENERATIVE ARC LAMP.

8,000

in use.

Most Effective Horizontal Distribution.

50 per cent. more light than an ordinary flame arc, SIX TIMES AS EFFICIENT AS METALLIC FILAMENT LAMPS, and absolutely steady

Lowest Carbon Costs—80 hours life per pair.

New Companies.

The Rustenburg Orange Export Co., Ltd., 41, National Mutual Buildings, Johannesburg; registered January 5; capital, £3,000.

Trimbles Detective Agency, Limited, Portland House, Commissioner Street, Johannesburg; registered January 5; capital, £1,000.

Morris Lynn, Ltd., Stand 71, Cleveland, Witwatersrand; registered January 9; capital, £150.

E. J. Adcock, Ltd., 45, Ockerse Street, Krugersdorp, Transvaal; registered January 9; capital, £6,000.

Rietvallei G.M. Co., Ltd., 7-8, Bettelheim Buildings, Simmonds Street, Johannesburg; registered January 9; capital, £7,000.

Hydrargyre Exploration Tin Mining Co., Ltd., Ef 76, Mare Street, Pietersburg; registered January 9; capital, £2,000.

Eastern Whaling Co., Ltd., Bardsdorf's Buildings, Marshall Square, Johannesburg; registered January 11; capital, £45,000.

The Alpine Syndicate, Ltd., care of Stewart Edington, corner President and Pilgrim Streets, Barberton; registered January 16; capital, £3,250.

Town Hall Meat Market, Ltd., Stand 509, Jagger's Buildings, President Street, Johannesburg; registered January 17; capital, £900.

Savoy Theatres, Ltd., 19, Green's Buildings, Commissioner Street, Johannesburg; registered January 17; capital, £7,000.

Aeronautics, Ltd., 49, National Mutual Buildings, Rissik Street, Johannesburg; registered January 18; capital, £1,000.

Golden Hill, Pongola G.M. Syndicate, Ltd., 14, Transvaal Bank Buildings, Fox Street, Johannesburg; registered January 18; capital, £8,000.

The Boksburg Club, Ltd., office of Sydney J. Knight, corner Commissioner and Station Streets, Boksburg; registered January 20; registered capital, £2,000.

A.B. Syndicate, Ltd., 29, Market Street, Boksburg, Transvaal; registered January 22; capital, £2,500.

The Barker Contracting Co., Ltd., Stand 494, Ninth Street, New Doornfontein, Johannesburg; registered January 24; capital, £1,000.

Stollwerck's Confectionery (S.A.), Ltd., 115, Stock Exchange Buildings, Fox Street, Johannesburg; registered January 25; capital, £50.

Groot Spelonken Trading Co., Ltd., Farm Middagzon 926, Zoutpansberg district, Transvaal; registered January 29; capital, £600.

Union Electric Co., Ltd., 94, Standard Bank Chambers, Johannesburg; registered January 31; capital, £100.

Foreign Companies Registered.

M. Cohen and Co., Ltd., care of W. T. P. Quinton, 32, Von Brandis Street, Johannesburg; registered January 13; capital, £2,000.

London Diamond and Estate Co., Ltd., care of J. Donaldson, 148, Exploration Buildings, Johannesburg; registered January 13; capital, £25,000.

New Eland Diamonds, Ltd., care of J. Mitchell, 47, Cullinan Buildings, Johannesburg; registered January 13; capital, £75,000.

William Brown and Co. (South Africa), Ltd., care of D. Johnston, 34, St. Andries Street, Pretoria; registered January 15; capital £1,000.

Lewis and Marks, Ltd., care of A. C. Mallinson, 65, President Street; registered January 31; capital, £1,600,000.

Selcraig's (Colonial), Ltd., care of J. Boyd, 6a, Goldreich Buildings, Commissioner and Joubert Streets, Johannesburg; registered January 31; capital, £10,000.

Prospectuses.

Mooifontein Diamond Fields, Ltd., registered January 18.

Rietvallei G.M. Co., Ltd., Johannesburg; registered January 18.

The Co-operative Alluvial Diamond Co., Ltd.; registered January 31.

The Union Steel Corporation (of South Africa), Johannesburg; registered January 31.

Decrease of Capital.

Van Ryn Deep, Ltd., Johannesburg; registered January 4; capital decreased from £1,750,000 to £598,446.

Increases of Capital.

Van Ryn Deep, Ltd., Johannesburg; registered January 4; capital increased from £598,446 to £1,196,892.

Randfontein Estates G.M. Co. (Witwatersrand), Ltd., Johannesburg, registered January 5; capital increased from £3,001,089 to £3,001,458.

The National Diamond Prospecting and Developing Syndicate, Ltd., Johannesburg; registered January 5; capital increased from £15,000 to £20,000.

Witwatersrand Native Labour Association, Ltd., Johannesburg; re-registered January 9; capital increased from £56,198 to £60,926.

The Miller G.M. Co., Ltd., Johannesburg; registered January 9; capital increased from £7,500 to £12,500.

New Rand, Ltd., Johannesburg; registered January 11; capital increased from £128,910 to £130,205.

Wis-Nak, Limited.—Capital increased from £4,000 to £6,000.

Heroine Gold Mining Co., Ltd.—Capital increased from £10,000 to £20,000.

Change of Name.

Messrs. A. Pargiter and Co., Ltd., have changed their name to Engineering Supplies, Ltd.

The African Loan and Finance Co., Ltd., has changed its name to African Finance Corporation, Ltd.

Companies in Liquidation.

The following companies have been placed in liquidation:—

Santoy G.M. Syndicate, Ltd., Johannesburg; voluntary.

The Transvaal and Rhodesian Farms and Mines, Ltd., Johannesburg; voluntary.

Quince Syndicate, Ltd., Johannesburg; voluntary.

Rhenosterfontein Prospecting Syndicate, Ltd., Johannesburg; voluntary.

G.E.M. Exploration Syndicate, Ltd., Johannesburg; voluntary.

Hawton Sinclair Papley Syndicate, Ltd., Johannesburg; voluntary.

Paton and Morison, Ltd., Johannesburg: voluntary.

Transvaal and Orangia Property Trust, Ltd., Johannesburg; voluntary.

Seta No. 2 Minerals and Precious Stones, Ltd., Johannesburg; voluntary.

Simmer and Jack East, Ltd., Johannesburg; by order of Court.

Warren Bros., Ltd., Johannesburg; by order of Court.

Rand Rhodesia Syndicate, Ltd., Johannesburg; voluntary.

Liquidation Meetings.

Martin Patent Furnace and Gold Extracting Co.; a first meeting will be held at the Master's office, Pretoria, February 16th, and a second meeting at the same place on March 1st. Samuel Thomson, Johannesburg, and Robert E. Ball, of Capetown, liquidators.

Parys Gold Mining Co., Ltd. (voluntary); a first meeting will be held before the Master, Pretoria, on February 16th, and a second meeting on March 1st. Louis C. Goch, liquidator.

Doornkom Tin Syndicate, Ltd. (voluntary), February 6th; E. Danckwerts and Co., liquidators; a meeting of creditors will be held at the offices of the liquidators, 37, Winchester House, Loveday Street, Johannesburg, on February 23rd.

Colmar Block, Ltd., The (voluntary), February 8th; a meeting of creditors will be held on February 24th, at the office of H. Feldmann, secretary to the liquidators, First Floor, Transvaal Gold Fields Buildings, Fraser Street, Johannesburg.

Main Reef Exploration Syndicate, Ltd., February 9th. John H. Rainier, liquidator.

Middelburg Sporting Club; liquidation and distribution account will lie for inspection at the office of J. S. Minnaar, joint liquidator from February 13th to 20th.

Hawton Sinclair Papley Syndicate, Ltd., Nooitgedacht, Lydenburg, January 5th; a meeting will be held at the office of the liquidator, Geo. C. Simmonds, on February 2nd; claims to be filed and debts to be paid to the liquidator within twenty-one days from February 14th.

A. V. Rosettenstein Syndicate, Ltd. (voluntary); a general meeting will be held at 13, Birch's Buildings, Johannesburg, on March 19th. E. C. Lowe, liquidator.

Christmas Mynpacht Syndicate, Ltd.—A general meeting of the company will be held at 49 Exploration Buildings, Commissioner Street, Johannesburg, on March 4th.

Goodwin Tin Syndicate, Ltd.—A general meeting will be held at Natal Bank Chambers, Market Square, Johannesburg, on March 11th. Richard Rusk, liquidator.

Draaikraal Syndicate, Ltd. (voluntary), January 26th. Henry Taylor, liquidator.

New Cape Companies.

REGISTERED DURING JANUARY.

The Milnerton Golf Club Co., Ltd.—Registered office, Capetown. Subscribers: Spencer Ray, E. K. Green, L. MacLean, and five others. Capital, £1,000. Registered, January 4th.

East London Flour Milling Co., Ltd.—Registered office, East London. Subscribers: Henry Stevenson, Wilhelm Medefindt, Edward Josling, and four others. Capital, £15,000. Registered, January 19th.

The Simplex Safety Catch Co., Ltd.—Registered office, Kimberley. Directors: Charles Dickie, Fred. Lambert, R. Stables, A. E. Rogers, and Robert B. Browning. Capital, £12,000. Registered January 31st.

The New Vineyard Estates, Limited.—Registered office, Capetown. Directors: J. Cran, J. Forrest, J. Parker, A. B. Reid, and A. G. Gray. Capital £5,000. Registered January 24th.

Steven Jennings and Broad, Ltd.—Registered office, Capetown. Directors: Charles Cecil Broad and Charles Adolphus Steven-Jennings. Capital, £4,000. Registered January 20th.

Union Finances.

A Blue Paper was issued last week containing the "Report by the Controller and Auditor-General on the Balances brought into Union by the Colonies of the Cape of Good Hope, Transvaal, Natal, and the Orange River." The Auditor-General states that he had intended making a further report, bringing the figures together and remarking on them, but this intention was anticipated by the Department of Finance publishing statements on January 31, 1911, in what is known as the Treasury White Book. It is on the figures contained in this statement that he now reports. The Auditor-General regrets "that the really excellent summary of the financial position at Union," contained in the White Book, should have been "marred by somewhat invidious comparisons of the accounting practices in the four colonies," especially as "they were evidently made without the Cape system being properly understood." He controverts the criticisms levelled against the Cape system, and points out that the Treasury was able to take from the Exchequer accounts of the Cape the figures it needed for the White Book, "without apparently any difficulty other than that of making itself acquainted with the system in use." He further points out that the Treasury memorandum contains misleading statements in regard to the consolidated revenue accounts of the Cape, and shows that up to the end of 1909, "besides £5,138,479 having been paid off loans by the public revenue, a sum of £4,041,908 had been paid out of revenue for services which might well have been covered by loan." The statement, therefore, that the Cape practically brought in a deficit of £3,457,030 is as unjustifiable as it would be to reduce the consolidated revenue balance of £871,667 brought into Union by the Transvaal by its outstanding debt of £541,509, representing the deficit in the year 1901-1902." In conclusion, the Auditor-General says: "Considering the difficulties and pressure under which the White Book was prepared, the Treasury is certainly to be congratulated upon the production. The close criticism to which the figures have since been subjected has shown extraordinarily few inaccuracies, and it will be observed that many of those are in estimated figures, which necessarily could not be exact. The balances shown in the White Book being accepted by Parliament as the opening balances at the date of Union, the adjustments in subsequent years will necessarily follow, with explanations in the accounts published showing their history and character."

* * * *

Natal Bank.

The report and statement of accounts of the Natal Bank for 1911 shows a better result than that for the preceding year, viz., a net profit of £70,100 18s. 10d., against £60,384 6s. 4d. for 1910, which, considering the stringency of the money market, and the high rates paid for fixed deposits, must be regarded as a satisfactory result. The current year begins with liquid assets of £2,039,300 8s. 11d. This amount gives a ratio of 41.56 per cent. against liabilities of £4,906,122 12s. 9d. The actual coin held represents, in relation to the floating liabilities, a ratio of 30 per cent. Advances, etc., stand at £3,585,519 2s. 9d., showing an increase of £174,241 13s. 4d., largely due to the expansion of business consequent upon the demands of the export trade, especially in Natal, and to the requirements of new branches. Note issue, which at the previous year stood at £116,247 10s., is now £121,595 10s., an increase of £5,348. There is a decrease of £428,987 in the deposits shown in the accounts at £4,184,738 13s. 7d. Bills payable stand at £271,582 11s. 7d., an increase of £74,901 9s. 7d. Bills of exchange show an increase of £89,000. Bills for collection, £493,501 3s. 10d., an increase of £129,135 4s. 11d. The directors have deemed it desirable to add to the reserve fund £15,000, and to carry forward £15,100 15s. 10d. to the new account. The fall in deposits is chiefly owing to the new financial arrangements made by Government, concentrating funds to a large extent in Pretoria. A considerable amount of Government balances have been so transferred. The demand for money consequent on the expansion of trade and new industries, especially in Natal, have also had their effect, as offering more profitable openings for the use of money than placing it at bank interest.

Defunct Companies.

The following Companies have been removed from the list :—

53. Crown Reef Gold Mining Co., Ltd.
202. Vogelfontein United Colliery Co., Ltd.
593. Paarl Central Gold Mining and Exploration Co., Ltd.
595. African Estates Co., Ltd.
753. South Rand Gold Mining Co., Ltd.
896. The Jumpers Deep, Ltd.
1049. Modderfontein Extension, Ltd.
1110. Glen Deep, Ltd.
1117. Langlaagte Deep, Ltd.
1527. Robinson Central Deep, Ltd.
1609. South Nourse, Ltd.
1747. Turf Mines, Ltd.
1835. Empire Palace Company of South Africa, Ltd.
2208. S. G. O. Syndicate, Ltd.
2456. Lavenona Exploration Co., Ltd.
2540. The Kroonstad Diamonds, Ltd.
2723. The New Aurum Alluvial Co., Ltd.
2736. The South African Periodicals, Ltd.
2754. New Greyling-Boshof Diamond Mining Co., Ltd.
2755. Eclipse (Barberton) Copper Syndicate, Ltd.
2802. British Crown Diamond Mining Syndicate, Ltd
3071. The G.C.B. Syndicate, Ltd.
3248. The South African Sport and Finance, Ltd.
3285. Bards Developing Co., Ltd.
3286. Fairview Developing Co., Ltd.
3287. Canterbury Developing Co., Ltd.
3317. Kokstad Base Metals, Ltd.
3375. Union Publishing Syndicate, Ltd.
3429. The Gouliandris Madagascar Gold Concessions Co., Ltd.
3580. Observer, Ltd.
3836. Lyceum Theatres, Ltd.

Three facts regarding the Transvaal worth remembering:

(1) The Transvaal is producing over one-third of the world's gold output.
(2) Transvaal mines have spent 24 millions sterling on machinery and plant.
(3) The *South African Mining Journal* is the official organ of the Mine Managers' Association.

To Advertisers & Subscribers.

Notice is hereby given that Mr. C. CARLYLE GALL'S connection with the S A. Mining Journal Syndicate, Ltd., has entirely ceased and any authority given to him to canvass for advertisements and collect monies on the Syndicate's behalf has been cancelled.

By order.

QUARTERLY REPORTS.

Durban Roodepoort Deep.

The Directors' quarterly report for the three months ending 31st December, 1911, states :—Mine.—Development Work : Number of feet driven, sunk and risen, exclusive of stopes, 5,383 feet. The reef disclosures were as follows : Main Reef : Distance exposed, 2,477 feet; width, 22 ins. ; assay value, 12.7 dwts. South Reef : Distance exposed, 2,098 feet, width, 11 ins. ; assay value, 25.5 dwts. Ore Treatment.—The following were the results obtained from the reduction operations : Milling : Percentages of waste sorted out, 15.8 per cent. ; number of stamps in operation, 100 stamps ; average running time, 81 days ; ore milled, 69,980 tons ; milling duty per stamp per 24 hours, 8.6 tons ; yield, 15,945 ozs. fine ; yield per ton milled, 4.56 dwts. fine. Cyaniding : Tons treated, 69.335 tons ; yield, 7.827 ozs. fine ; yield per ton treated, 2.26 dwts. fine. Summary of Ore Treatment (on basis of tonnage milled).—Total Yield : milling, 15.945 ozs. fine (4.56 dwts. fine per ton) ; cyaniding, 7,827 oze. fine (2.23 dwts. fine per ton) ; total, 23,772 ozs. fine (6.79 dwts. fine per ton). Working Expenditure and Revenue.—To mining expenses (mining, £46.922 9s. 1d., developing, £8,464 17s. 2d.), £55,387 6s. 3d. (15s. 10d. per ton milled) ; reduction expenses, £17.454 4s. 9d. (5s. per ton milled) ; general expenses, mine, £4,717 2s. 3d. (1s. 4d. per ton milled) ; head office, £2.270 14s. 1d. (8d. per ton milled) ; total working expenses, £79.829 7s. 4d. (£1 2s. 10d. per ton milled) ; working profit, £19.739 5s. 10d. (5s. 7d. per ton milled) ; revenue, £99,559 13s. 2d. (£1 8s. 5d. per ton milled) ; to other net expenditure (after deducting interest, etc., received), £333 18s. 9d. ; net profit, £19,396 7s. 1d. ; total, £19,730 5s. 10d. Note.—The 10 per cent. tax on profits due to the Government for the quarter is estimated to amount to £1,319. Reserve Gold.—At the 31st December, 1911, the Company had 218 ozs. fine gold in reserve. The capital expenditure for the quarter has amounted to £5,735 16s. 11d. The fifteenth annual meeting of shareholders will be held in the board room, the Corner House, Johannesburg, on Tuesday, 12th March, 1912, at 12 noon. It will be proposed at this meeting to adjourn until 28th May, 1912, at 3 p.m., in order to give shareholders ample opportunity of perusing and considering the report and accounts, which it is anticipated will be in the hands of shareholders about the 6th April, before deciding as to the disposal of their proxies. A special circular dealing with this subpect has been addressed to shareholders. An interim dividend (No. 5) of five per cent. was declared on December 15, 1911, for the period ending December 31, 1911, and will be payable on or about February 5, 1912, from the head and London offices to shareholders registered on the Company's books at December 31, 1911. Holders of share warrants to bearer will receive payment of coupon No. 5 attached thereto on presentation at the London office.

Ferreira G.M. Co.

The directors' quarterly report for the three months ending 31st December, 1911, states :—Mine.—Stoping : Tonnage stoped, 78,533 tons. Ore treatment.—The following were the results obtained from the reduction operations : Milling : Percentage of waste sorted out, 8.3 per cent. ; number of stamps in operation, 100 ; average running time, 85 days ; ore milled, 72.000 tons ; milling duty per stamp per 24 hours, 8.5 tons ; yield, 15,664 ozs. fine ; yield per ton milled, 4.35 dwts. fine. Cyaniding : Tons treated, 69,550 tons ; yield, 9,142 ozs. fine ; yield per ton treated, 2.63 dwts. fine. Summary of ore treatment (on basis of tonnage milled) : Total Yield.—Milling, 15,664 ozs. fine (4.35 dwts. fine per ton) ; cyaniding, 9,142 ozs. fine (2.54 dwts. fine per ton) ; total, 24.806 ozs. fine (6.89 dwts. fine per ton). Working Expenditure ond Revenue.—To mining expenses (Mining £35,203 0s. 5d., development redemption, £1,800), £37.003 0s. 5d. (10s. 3d. per ton milled) ; to reduction expenses, £17,966 11s. 10d. (5s. per ton milled) ; to general expenses, mine, £5,009 3s. 6d. (1s. 5d. per ton milled) ; head office, £2,476 4s. 10d. (8d. per ton milled) ; total working expenses, £62.455 0s. 7d. (17s. 4d. per ton milled) ; to working profit, £41.541 17s. (11s. 7d. per ton milled) ; total, £103.996 17s. 7d. £1 8s. 11d. per ton milled). To net profit, £54,098 6s. 7d. Note.—The 10 per cent. tax on profits due to the Government for the quarter is estimated to amount of £3,884. Reserve Gold.—At the 31st December, 1911, the company had 1,970 ozs. of fine gold in reserve. The capital expenditure for the quarter shows a credit of £115 10s. Shareholders are advised that as the reserves of developed ore are becoming exhausted, most of the rock required for the mill after 1st January, 1912, will be obtained from old workings, reef packs, and isolated pillars. It is difficult to estimate the quantity and value of rock from these sources, but it is hoped that about 60 stamps will be kept running during the early part of 1912, crushing approximately 16,000 tons per month. A considerable decrease in profits is to be expected, but every endeavour will be made to keep expenditure as low as possible. The twenty-second meeting of shareholders will be held in the board room, the Corner House, Johannesburg, on Thursday, March 21, 1912, at 12 noon. It will be proposed at this meeting to adjourn until June 4, 1912, at 11 a.m., in order to give shareholders ample opportunity of perusing and considering the report and accounts, which it is anticipated will be in the hands of shareholders about the 6th April, before deciding as to the disposal of their proxies. A special circular dealing with this subject has been addressed to shareholders. An interim dividend (No. 36) of 100 per cent. was declared on December 15, 1911, for the half-year ending December 31, 1911, and will be payable on or about February 5, 1912, from the head and London offices to shareholders registered on the Company's books at December 31, 1911. Holders of share warrants to bearer will receive payment of coupon No. 29, attached thereto, on presentation either at the London Office, or at the Credit Lyonnais, Boulevard des Italiens, Paris.

Benoni Consolidated.

The report for the quarter ended 31st December, 1911, states :—Mine.—East shaft—Stoping operations have been carried on on the Main Reef and Upper Main Reef, and 16,454 tons from this section have been sent to the crusher station. Central shaft : 7,920 tons of Main Reef have been sent to the crusher station from this section. Development and values : Development work has been confined to the Eastern Section. The footage driven, risen and sunk on the Reef was 602.5 feet, the payable sections of which gave the following results :—Footage, Main Reef, 124 feet : Upper Main Reef, 62 feet. Average stope width : Main Reef, 54.32 ins. ; Upper Main Reef, 42.00 ins. Average stope value : Main Reef, 8.13 dwts. Upper Main Reef, 7.38 dwts. Ore reserves : The ore reserves on a milling basis at the end of the quarter were as follows :—Payable 606,839 tons, miling width 43.12 ins., assay value 6.56 dwts. ; unpayable 362,507 tons, milling width 44.82 ins., assay value 3.28 dwts.

Reduction plant.—Trial runs of the reduction plant commenced in the middle of November. During this period the crushing station, stamps, tubemills and shaking tables were placed in running order, and at the end of the month cyanide solution was turned into the secondary treatment plant. During December the conditioning of the plant was continued. It was found that the Arbuckle screws were not extracting all the slime the Arbuckle cones were capable of settling, and in order to expedite the treatment of the slimes it was decided to pump the settled product into the treatment plant by means of pumps which had already been installed.

Ore treatment.—Mined, 24,374 tons ; received from surface dump, 1,266 tons :—25.640 tons ; less sorted out (18.94 per cent.), 4,857 tons ; to mill 20,783 tons ; gold recovered, 2,772.196 ozs.

Expenditure.—The expenditure for the quarter was as follows : Underground work and surface equipment, £33.126 7s. 3d. ; preliminary stoping, £1,928 4s. 6d. ; expenses in connection with preliminary crushing (less revenue), £16.220 19s. 5d. ; interest, £1,488 9s. 10d. Total, £52,764 1s.

Geldenhuis Deep.

The Directors' quarterly report fcr the three months ending 31st December, 1911, states :—Mine.—Development Work : Number of feet driven, sunk and risen, exclusive of stopes, 9,630 feet. The reef disclosures were as follows : Main Reef : Distance exposed, 2,551ft. ; width, 20ins. ; assay value, 8.5 dwts. Main Reef Leader : Distance exposed, 3,845ft. ; width, 8ins. ; assay value, 21.2 dwts. ; South Reef : Distance exposed, 4,635ft. ; width, 13ins. ; assay value, 10.8 dwts. Ore Treatment.—The following were the results obtained from the reduction operations : Milling : Percentage of waste sorted out, 18.2 per cent. ; number of stamps in operation, 420 stamps ; average running time, 69 days ; ore milled, 189,370 tons ; milling duty per stamp per 24 hours, 6.5 tons ; yield, 41,680 ozs. fine ; yield per ton milled, 4.40 dwts. fine. Cyaniding : Tons treated, 189,920 tons ; yield, 20,579 ozs. fine ; yield per ton treated, 2.17 dwts. fine. Summary of Ore Treatment (on basis of tonnage milled) : Total Yield : Milling, 41,680 ozs. fine (4.40 dwts. fine per ton) ; cyaniding, 20,579 ozs. fine (2.17 dwts. fine per ton) ; total, 62,259 ozs. fine (6.57 dwts. fine per ton). Working Expenditure and Revenue.—Mining expenses (mining, £127,962 9s. ; developing, £18,937), £146,899 9s. (15s. 6d. per ton) ; reduction expenses, £49,658 0s. 11d. (5s. 3d. per ton) ; general expenses (mine, £12,304 15s. 8d. 77d. per ton) ; total working expenses, £214,159 9s. 2d. (£1 2s. 7d. per ton) ; working profit, £46,922 14s. 7d. (5s. per ton) ; total, £261,082 3s. 9d. (£1 7s. 7d. per ton) ; to net profit, £51,418 11s. 10d. Note.—The 10 per cent. tax on profits due to the Government for the quarter is estimated to amount to £3,727. Reserve Gold.—At the 31st December, 1911, the Company had 1,580 ozs. of fine gold in reserve. The capital expenditure for the quarter has amounted to £7,396 3s., exclusive of the proportion of an annuity of £1,903 payable to the Government in respect of mining rights acquired under an area of 17.1866 claims. The seventeenth annual meeting of shareholders will be held in the board room, the Corner House, Johannesburg, on Friday, 8th March, 1912, at 11.30 a.m. It will be proposed at this meeting to adjourn until 28th May, 1912, at 11 a.m., in order to give shareholders ample opportunity of perusing and considering the report and accounts, which it is anticipated will be in the hands of shareholders about the 6th April, before deciding as to the disposal of their proxies. A special circular dealing with this subject has been addressed to shareholders. An interim dividend (No. 24) of 12½ per cent. was declared on 15th December, 1911, for the half year ending 31st December, 1911, and will be payable on or about 5th February, 1912, from the head and London offices to shareholders registered on the Company's books at 31st December, 1911. Holders of share warrants to bearer will receive payment of coupon No. 24 attached thereto, on presentation either at the London office, or at the Compagnie Francaise de Banque et de Mines, 20, Rue Taitbout, Paris.

Johannesburg Motor Garages and Suppliers of Motor Cars, Accessories, etc.

Dunlop Repair Shop

SEND YOUR TYRES FOR REPAIR OR RETREADING

TO THE

MANUFACTURERS.

DUNLOP GROOVED TREADS (manufactured in our English Factory) Fitted to any make of cover.

Burst Covers and Tubes properly repaired.

Call and inspect samples of our work.

Dunlop Repair Works

83, BREE ST.,
JOHANNESBURG.
P.O. Box 6370.
'Phone 831.

JUST ARRIVED—1912 MODELS

PHŒNIX AND VULCAN CARS

Trial Runs Arranged. Full Particulars from

REED'S GARAGE

GOVERNMENT SQUARE, JOHANNESBURG.
Phone 1434. P.O. Box 2720.

→ **3** ←

FACTS REGARDING THE

TRANSVAAL

WORTH REMEMBERING.

1. The **TRANSVAAL** is producing over one-third of the World's Gold Output.
2. **TRANSVAAL** Mines have spent 24 millions sterling on machinery and plant
3. The **"South African Mining Journal"** is the **Official Organ** of the **Mine Managers' Association**.

Manufacturers of

HIGH-CLASS

LUBRICANTS

Supplied to
British, Colonial and
Foreign Governments,
War Office,
Admiralty,
and
Forty-Two British
Railways, etc, etc.

BRITISH MADE BY

The Oil that Circulates Everywhere

A BRITISH FIRM.

WAKEFIELD

"CASTROL" MOTOR OIL.

C. C. WAKEFIELD & CO.,

3, 4 & 5, Howard Buildings, corner Main & Loveday Streets,
JOHANNESBURG.
P.O. Box 4452. Telegrams: "CHEER" Telephone 2432.

AWARDED GRAND PRIX for

OILS

at
BRUSSELS,
BUENOS AYRES,
and
TUNIS
EXHIBITIONS.

First and Fastest
"Hill Climbs"
1910.

First and Fastest
"Hill Climbs"
1911.

VAUXHALL CARS.

Sole Agents:

T. B. ADAIR & CO.,

67, Kotze Street,
HILLBROW,
JOHANNESBURG.

Phone 2570.
P.O. Box 1940.

Automobile Notes.

Visit of Two Prominent Motorists.

Two prominent motorists, Mr. S. F. Edge and Mr. C. Jarrot, have aroused more than a passing interest in automobile circles during their stay in Johannesburg, and the community have certainly benefited by the all too brief visit. Mr. Edge, and his motorist confrere, were met at Krugersdorp, to which place they had travelled in a specially designed 15·9 Napier car, by the President of the Transvaal Automobile Club, the Mayor of Johannesburg, Mr. J. Dowell Ellis, and a number of other prominent motorists, who escorted the visitors to Johannesburg. The object of Mr. Edge's tour, as is now fairly well known, was to study local conditions in connection with motoring, and the more thoroughly to ensure this desired end, in practical fashion, has travelled extensively in the car, already referred to, and will therefore be able to form a very definite conclusion as to the type of car best suited to the peculiar conditions of the country. In the process of being initiated to the last mentioned, Mr. Edge has had some unique experiences, including a night on the veld, while his efforts in negotiating many of the tracks and so-called roads in the itinerary, will provide interesting subject at a later date in published form, but which have, nevertheless, convinced him of the adaptability of the motor to this country; in fact, he considers it indispensable, having regard to the conditions prevailing, and in his opinion a great future awaits the motor industry in South Africa. On the completion of his visits to Durban and Port Elizabeth, Mr. Edge returns to Capetown, *en route* to England.

T.A.C. Presentation of Prizes.

Quite a large number of motorists accepted the invitation of the Transvaal Automobile Club to the prize distribution on last Saturday at the Mayor's residence, Yeoville. Mrs. J. Dowell Ellis, the Mayoress, presented the various prizes, won in the several events of the past racing season, and also ably presided over the social side of the function, which, on the whole, was of the usually successful order. The Club President's remarks to the gathering reflected once again the keenness of his oft-expressed desire for a better system of roadways throughout the country, and he urged upon the members of the Auto Club the importance of co-operation in order to induce the Government to act in this matter. Mr. Ellis expressed the opinion, also shared by his hearers, that better roads would offer valuable attraction to oversea tourists to visit South Africa, as is the case in other countries of the world.

Puncturite.

A reference to "Puncturite," a new and original preparation to deal with the bugbear of motoring, the puncture, is solely made in the interests of our readers, who will welcome any remedy offering genuine results, in point of combatting this nuisance. Briefly, "Puncturite" is a fluid manufactured from the sap of a plant containing rubber, and when introduced to the inner tube of a motor or cycle wheel through the valve socket, it is alleged, in an automatic, instantaneous, and permanent way, deals with the puncture. Its claim to recommendation is further upheld by a thorough test, conducted privately, over 18 months, with satisfactory results, and also by the fact that the preparation preserves and lengthens the life of the tyre.

A Boom in the Motor Car Trade.

It is by no means an exaggeration to say that the motor car business in Johannesburg at the present is booming, and never since the introduction of the motor has the industry on the whole experienced such a decided filip. The prominent makes of cars are snatched up as quickly as they arrive, and "first refusals" in these lines are the order of the day, so to speak. Large orders are being placed with the various manufacturers to keep pace with the demand, and by way of illustration, it may be remarked that quite recently half a gross of one particular type were indented for by the local representatives. The time has evidently arrived when the almost indispensable nature of the car is becoming patent to all. Business men to-day must have the car on the score of prestige, if for no other reason, but the wisdom of the decision which actuates the purchase will be fully justified in the time-saving and other unique facilities afforded by its use. The outcry so defined at Home some time ago for the 200 guinea car is again being revived, and this demand if not met by the British manufacturers will of a surety be satisfactorily supplied by others, who, with covetous eyes, watch the possibilities of this cheap car market, and it appears a similar demand is being experienced in South Africa, where a market awaits a cheap and reliable car embracing Colonial requirements.

CONTINENTAL
THE WORLD'S LEADING TYRES.

FOR MOTOR CARS:
The Extra Heavy Square Tread Tyre;
The Tropical Renforcé Three Ribbed Tyre;
The Black Red Steel Studded, as used exclusively during the "Prince Henry Trophy" Race.

FOR MOTOR CYCLES:
The Extra Heavy Tyre, Ribbed Pattern;
The Rubber Studded, Non Slipping Tyre.

N.B.—All our Tyres are specially manufactured by our Home Company to suit the South African Climate and Roads, and stand UNSURPASSED in Quality.

STOCKS OBTAINABLE THROUGHOUT SOUTH AFRICA.

Lubrication Troubles.

An absence of lubrication troubles undoubtedly goes a long way towards pleasureable motoring, and likewise contributes largely to the pursuit from the profitable standpoint, insomuch that the motorist who is unhampered in this respect can naturally crowd much more into his day than is possible if he were constantly at the mercy of faulty lubrication, or put in other words, bad oil. Many cars, it may be mentioned, which seemingly give undue trouble are sometimes wrongly condemned by the motorist, while the lubricant used in reality is so often at fault. Considering the many brands of oil on the market, one is, however, at a loss to differentiate, but as so much depends on the lubricant, the motorist may be wisely influenced in his choice, more or less by the success attending the use of any particular oil in other directions. The attention of readers in this connection may be drawn to an advertisement appearing elsewhere in this issue, setting forth the merits of Wakefield "Castrol" motor oil, a British product, which has been introduced to the country with very gratifying results. Commanding a place second to none as a lubricant in Britain and many other countries of Europe, being specially manufactured for aeroplanes and motors, its future is assured in the South African market. It is significant to observe that the local successful aeroplane flights in Johannesburg owes much to this particular oil, which was used by the aviators, while the world's record for altitude—6,750 feet—was made on this oil, and in addition the world's record for speed in the flying mile, and numerous other prominent successes have been made possible, to a great degree by the use of "Castrol," which, by the way, may be confidently recommended to the motoring public of South Africa.

American v. British Cars.

An American criticism of British cars, appearing in *Automobile Topics* of New York, which, however, need not be taken too seriously, affords amusing reading in expressing an opinion that "the English cheap car is a little underpowered runabout which would not last six months in the hands of the average American," and further, in summarising his impressions, with reference to the Olympia Show, the writer says: "Disappointed because the new things in cars are too new and radical, and the old ones are worn out; no really clever accessory devices worth considering; smallness of the accessory exhibits; reluctance of the Briton to part with information to an American engineer; conceitedness of the British engineer and manufacturer; the Briton sells the cars and then builds them, while the American builds them and then sells them." British motorists may, however, will view this subject satisfactorily from the standpoint of things American, including cheap cars, which latter the biassed writer has most fittingly described under the guise, forsooth, of the British car. Be that as it may, it affords food for thought how a powerful American car can be sold, fully equipped, ready for the road, at a price equal to the amount of money spent alone on "men's time" in building a chassis of equal power in Europe; but some light may be thrown on the mystery by the criticism of a British writer in this instance, who, referring to the finish of the hidden parts in an American motor, was of opinion that, "they compare not very favourably with that of a mowing machine." Despite all criticism, complimentary or otherwise, it is satisfactory, however, to report that last year's exports of British motor cars and parts exceeded by £650,000 the figures for the preceding year, from which one can gather that the motor trade is by no means languishing at home.

"SHELL"
MOTOR SPIRIT

A
POPULAR
PETROL

AT A
POPULAR
PRICE.

Rains and the Roads.

An attempt to describe the state of many Johannesburg streets, at the present time, consequent to the deluges of late, would prove a difficult task; but due allowance, of course, course, would be made in the case of washed-away surfaces, which will entail weeks of labour to repair, were an effort made to remove the accumulations of soft mud and loose material resulting from the excess flow of water across many streets, which the storm drains seem incapable of dealing with. The mud, especially, is responsible for many serious car side-slips, that are seldom made public, unless it so happens that another vehicle is damaged, or injury to the individual occurs. Some day probably the motor propelled sweeper will celebrate its advent in Johannesburg, but, pending this remote possibility, scrapers, such as are used in England and elsewhere, might with advantage be employed at points where the present system of drainage is known to be inefficient, and the mud with noted limpet propensities accumulates.

Contracts Open.

Mr. J. F. Beardwood, architect, invites tenders for the erection of a Three Storied Brick Building at the corner of Market and Kruis Streets, Johannesburg (Mar. 4).

The Municipality of Pretoria invites tenders for the carrying out of the work in connection with the erection of a Tramway Pavilion on East Island, Church Square, Pretoria (Mar. 15).

The Municipal Council of Johannesburg invites tenders for the supply of Light Tramway Track, Bricks, Tents (Mar. 12).

The Benoni Municipality invites tenders for the supply of 3,000 feet of 7/22, 3,000 feet of 7/20, and 1,000 feet of 7/18 Two-Core Electric Cable (Mar. 6).

The Chairman of the Union Tender Board invites tenders for the supply of Rations for the Volunteer Camp, to the Department of Transvaal Volunteers, Johannesburg (Mar. 13); also for the supply of 100 Edison Lalande Cells, size 15in. by 9in., capacity 600 ampere hours, E.M.F. ·75 volts; 250 sets of renewals for above, each set to consist of two zinc plates, two copper oxide plates, one can of potash, and one bottle of oil, to the Department of Posts and Telegraphs (Mar. 20).

The Provincial Secretary, Wale Street, Capetown, invites tenders for the erection of a Bridge of one Span of 100 feet over the Tyumie River, Alice, Victoria East Division, Cape Province (Mar. 22).

The Chairman of the Tender Board, P.O. Box 371, Pretoria, invites tenders for the supply of Hats (or Helmets) and Caps to the Department of Posts and Telegraphs (May 29).

The Chairman of the Tender Board, Provincial Secretary's Office, Market Street, Pretoria, invites tenders for the erection of Teachers' Quarters, at Zendelingsfontein No. 88 School, Wolmaransstad District, Transvaal (Mar. 22).

The Chairman of the Union Tender Board, P.O. Box 371, Pretoria, invites tenders for the erection of Police Post at Mooifontein (Diamond Diggings), Bloemhof, Western Transvaal (Mar. 20).

The Secretary to the Tender Board, S.A.R. Offices, Johannesburg, invites tenders for the Earthworks, Masonry and Concrete (in four contracts) on the Winterton—Bergville Railway (Mar. 20).

The Chairman of the Union Tender Board, P.O. Box 371, Pretoria, invites tenders for the erection of Union Bridge over the Umzimkulu River, between the Provinces of Natal and the Cape of Good Hope (March (20); also for additions to cow byres, bull boxes, piggeries, and erection of new reinforced concrete silo at the experimental farm, Potchefstroom (March 20); also for printing and supplying the Union and Cape Provincial estimates of revenue and expenditure for a period of three years, from 1st of July, 1912, to the 30th of June, 1915 (March 20); also for conversion of late Rand High Court Buildings into a Central Police Barracks, at Johannesburg (March 20); also for supply and erection of two electric passenger lifts for new law courts, Capetown (April 24).

The Municipal Council of Johannesburg invites tenders for supply of steel face for Norwood refuse destructor, and ironwork for drainage subway; also for hydraulic lift at abattoirs, Newtown (March 6).

The Municipal Council of Johannesburg invites tenders for 8-inch Borehole, Ellis Park, Doornfontein (Mar. 15).

The Municipality of Pretoria invites tenders for the erection of the new fire station at the corner of Koch and Minnaar Streets (March 15).

The Secretary of the Bloemhof Health Board, Bloemhof, invites tenders for the carrying out of the sanitary work of the town (March 4).

The Municipality of Boksburg invites tenders for the supply and erection, at the Sanitary Compound, Farm Klipfontein, of one power chaff-cutter, complete, capable of cutting not less than 2 tons chaff ($\frac{3}{8}$in.) per hour, to be fitted with safety feeders, fly wheel cover, feeding web, and strap fork, one spare wheel, and 24 knives (March 15).

The Engineer-in-Chief, S.A.R. Offices, Johannesburg, invites tenders for the earthworks, masonry, and concrete between mileage 9 and 19 miles 17 chains (in three sections) on the Greytown-Krantzkop Railway (March 8).

The Chairman of the Tender Board, Provincial Secretary's Office, Bloemfontein, invites tenders for the erection of a bridge of two spans of 40 feet each, and one span of 100 feet, concrete abutments and piers, over the Groot Vet River, District Winburg, Orange Free State (March 18).

The Municipal Council of Johannesburg invites tenders for the supply and delivery of 10 or 25 electric tram cars (April 1).

The Chairman of the Union Tender Board, P.O. Box 371, Pretoria, invites tenders for the printing of books, pamphlets, and Parliamentary reports, for a period of three years from the 1st of July, 1912, to the 30th June, 1915 (March 6); also for the supply of account books for a period of three years from the 1st of July, 1912, to the 30th June, 1915 (March 6).

The Chairman of the Tender Board, Attorney-General's Office, Pietermaritzburg invites tenders for the erection of a bridge of two spans of 40 feet each on masonry abutments and pier over the Umhlouyana Spruit, Newcastle Division, Natal, erection of a bridge of two spans of 40 feet each on masonry abutments and pier over the Klip Spruit, Newcastle, Natal, erection of a bridge of two spans of 30 feet each on concrete abutments and pier over the Umlalazi River, Eshowe Division, Natal (March 11).

The Town Clerk of the Municipal Council of Salisbury, Rhodesia invites tenders for the supply and delivery of: (a) Mild steel tubes, special castings; (b) Sluice, air, reflux and equilibrium ball valves, expansion joints, hydrants and surface boxes, joint rings, bolts and washers; (c) meters (d) Galvanised wrought iron pipes and fittings; (e) Lead; and (f) Yarn (March 11).

When communicating with advertisers kindly mention the *South African Mining Journal.*

Tenders Accepted.

The following tenders have been accepted for the various services mentioned, namely : W. W. Peffers, 8, Cricket Street, Bloemfontein, £1,263 ; alterations to White Male Ward. Lunatic Asylum, Bloemfontein. J. Ingram and Co., P.O. Box 775, Pretoria, £2,799 9s. ; erection of bridge over the Blesbokspruit, Heidelberg. Nielsen and Co., Box 14. Pietpotgietersrust, £1,310 10s. ; erection of police buildings at Blauwberg, Zoutpansberg. C. L. Schuddink, 3, Queen's Road, Seapoint, Capetown, £5,645 5s. 6d. ; supply and erection of steelwork for bridge over Olifants River, Clanwilliam, Cape Province. Fairburn and Wilson, Box 87, Ermelo, £584 ; erection of sheep-shearing shed at Ermelo.

The South African Railways have accepted the following tenders :—

(1) Coal.—Tender No. 351, coal for electric light works, Cape Province : Messrs. Natal Navigation Collieries, Ltd., pea coal, 10,976 tons of 2,000lbs., at 16s. 11d., £9,283 17s. 4d., delivered ex ship, Capetown ; Messrs. Vryheid (Natal) Railway Coal and Iron Co., Ltd., pea coal, 3,360 tons at 15s. 6d., £2,604 ; round coal, 250 tons at 18s. 6d., £233 2s., delivered ex ship, Port Elizabeth ; Messrs. Hatting Spruit Collieries, Ltd., pea coal, 3,080 tons, at 13s. 9d., £2,117, delivered ex ship, East London. Tender No. 352, Coal for Natal Province : Messrs. The Vryheid (Natal) Railway Coal and Iron Co., Ltd., smithy nut coal (washed), 5,000 tons of 2,000lbs., at 3s. 9d., £187 10s. 9d., delivered in trucks at Hlobane station ; The Ramsay Collieries, Ltd., pea coal, 4,800 tons at 2s. 6d., £600 ; dross or slack, 7,500 tons at 4d., £125 ; nut, pea, and dross mixed, 4,580 tons at 1s. 7d., £362 11s. 8d. ; nut, pea and dross, additional 2,300 tons, at 1s. 7d., £182 1s. 8d. ; household round, 3,000 tons at 5s. 6d., £825 ; household nuts, 4,100, tons at 4s. 6d., £922 10s, total £3,017 3s. 4d. Delivered in trucks at Wessels Nek. (2) Wrought Iron Piping, 6in. : Messrs. The United States Steel Products Co., Johannesburg, 9,100 feet of 6in. screwed and socketed wrought iron piping, at 1s. 4⅜d. per foot, £620 17s. 9d. ; delivered, c.i.f., Delagoa Bay. (3) Steelwork for Durban Station Roof : Messrs. J. and R. Niven, Johannesburg, imported steelwork, £1,560. (4) Boiler Tubes : Tender submitted through the High Commissioner, London, Charcoal Iron Boiler Tubes, 13,100, £4,192 12s., delivered f.o.b. (5) Tramway Track and Side-Tipping Trucks : Mr. Voigt, Huguenot, Cape, tramway track, 24in. gauge, 16lb. section, 5 miles, at £208 per mile, £1,040 ; points and crossings, 24in. gauge, 16lb. section, ft. long (5 right hand and 5 left hand), 10 sets, at £2 6s. 3d., £23 s. 6d. ; total, £1,063 2s. 6d. ; Mr. J. H. Morpeth, Johannesburg : Side-tipping trucks, 18 cub. ft. capacity, bodies ⅛in. steel plate, 50 at £4 13s. 8d. each, £234 3s. 4d. ; side-tipping trucks, 27ft. capacity, bodies ⅛in. steel plate, 50 at £5 4s. 9d. each, £261 17s. 6d. ; total, £496 s. 10d. (ex ship, Delagoa Bay). (6) Soft Soap : Tender submitted through High Commissioner : Soft Soap, 30 tons of 2,240lbs. (delivered f.o.b.), at £16 7s. 6d., in 1cwt. drums (other packing extra), £491 5s. (7) Fencing, erection of, at Reef Stations : Mr. F. B. Walkden, Johannesburg : Erection of steel palisade fencing at Reef Stations, at 1s. d. per yard and 15s. per gate. (8) Insurance Coupon in Railway Pocket Time Table Book : The Ocean Accident and Guarantee Corporation : £213 for an estimated publication of 426,000 copies of the Pocket Time Table Book (£100 coupon) for 1912. (10) Fastenings, Bolts and Nuts for 583 miles of 80lb. Track : Messrs. Guest, Keen and Nettlefold, Ltd., England, at £13 10s. per ton. (11) Printing of Tariff Book : Messrs. Townshend, Taylor and Snashall, Capetown, 2s. per page for 10,000 copies.

The South African Railways have accepted the following tenders

1. Rails, Fishplates, and Chairplates, 80lb. section—583 miles : Messrs. Bolckow, Vaughan & Co., Ltd., England—Talbot Open Hearth Basic Process, Sandberg Open Hearth High Carbon Process, Bessemer Acid Process, Bessemer Basic Process, Sandberg Acid Process, Open Hearth Basic Process, £343,765 6s. 6d.

2. Trichardts Dam.—Messrs. Sullivan & Stack, Benoni, £1,725 5s. 0d.

3. Davel Dam.—Mr. J. A. Lange, Breyten, £2,203 17s. 6d.

4. Timber—Hardwood Logs and Planks.—Messrs. Millars' West Australian Hardwoods Co., Capetown : Hardwood Logs ex ship at—Capetown, 3,600 cub. ft. at 3s. 6d. per cub. ft., £630 ; Port Elizabeth, 2,200 cub. ft., at 3s. 6d. per cub. ft., £385 ; East London, 6,652½ cub. ft., at 3s. 6d. per cub ft., £1,164 2s. 11d. ; Hardwood Planks : Capetown, 28,000 running ft. at 3s. 6d. per cub. ft., £911 9s. 2d. ; East London, 11,000 running ft. at 3s. 6d. per cub. ft., £838 10s. 10d. ; total, £3,929 2s. 11d. Delivery during December, 1911, and January, 1912.

5. 20 tons of Scrap Brass Boiler Tubes.—Mr. S. Simon, Port Elizabeth : 20 tons at £38 16s. 10d. per ton of 2,000lbs., £776 16s. 8d.

6. Clocks—Winding and Regulating of—Capetown Railway Offices : Mr. H. C. Garn, Capetown, £50 per annum for attention to 90 clocks.

7. Time-Recording Clocks.—Messrs. Remington Typewriter Agency, Capetown : 68 "Rochester No. 101 Model," at £3 10s. each, £2,142.

8. Electrical Wire for delivery at Durban, East London, Port Elizabeth, Capetown and Braamfontein.—Messrs. Siemens, Ltd., Johannesburg, £588 17s. 6d. ; Messrs. Telegraph Manufacturing Co., Johannesburg, £658 10s. 7d. ; Messrs. Henley's (S.A.), Telegraph Works, Johannesburg, £630 10s. ; Messrs. Sykes & Co., Johannesburg, £22 14s.

9. Grootfontein-Laingsburg—Earthworks.—Mr. W. Ross, Grootfontein : Deviations No. 2 and 3, £1,339 2s. 2d.

10. George-Oudtshoorn Railway—Earthworks.—Contract No. 1—Messrs. Hannah Bros., George, £4,004 3s. 4d. ; Contract No. 2—Messrs. G. & H. Barker, Oudtshoorn, £2,717 1s. 6d. ; Contract No. 3—Messrs. E. Warren & Co., George, £5,050.

11. Germiston New Station Buildings and Passenger Subway.—Messrs. Williams Bros., Johannesburg, £24,425.

12. Drugs—as required.—For Capetown, Messrs. Petersen, Ltd. ; for Port Elizabeth, Messrs. Lennon, Ltd. ; for East London, Messrs. Lennon, Ltd. ; for Durban, Messrs. Lennon, Ltd.

13. Handles, Hammer, Etc.—Messrs. Wm. Hosken & Co., Johannesburg, for Hammer and Axe Handles, £305 2s. 7d. ; Messrs. Geo. Parkes & Sons, Ltd., Knysna, for Pick or Beater Handles, £549 1s. 3d.

14. Steam Tug for Table Bay Harbour.—Messrs. Ferguson Bros., Glasgow, £30,500.

15. Klerksdorp—Sale of Light Refreshments.—Let to Mr. Samuel Cohen, Klerksdorp, at rental of £10 per month.

16. Leather and Leather Goods—as required.—Messrs. Fraser and Sons, Ltd., Capetown—for Chair Cushions ; Messrs. Mossop & Sons, Ltd., Rondebosch—all other articles.

17. Sleepers.—Messrs. J. W. Buckley, Capetown.—756,000 Jarrah Sleepers at 5s. 5d. each, ex ship, Durban, East London, or Port Elizabeth ; Jarrah Crossing Timbers, at 2s. 5d. per cub. ft. Messrs. Millars' West Australian Hardwoods Co., Capetown : 656,000 Jarrah Sleepers at 5s. 6¾d. each, ex ship, Durban, East London, Port Elizabeth, and Capetown ; 100,000 Chilian Oak Sleepers at 4s. 11¾d., ex ship, Durban, East London, Port Elizabeth, and Capetown. Mr. Jac. Loopuyt, Capetown : 100,000 Cresoted Sleepers, at 5s. 1d. each, c.if., Capetown.

18. Timber—Hardwood Logs, Planks and Piles.—Messrs. Millars' West Australian Hardwoods Co., Johannesburg, total £3,976 2s. 11d.

Our Twenty-First Anniversary Number.

THE LAST WORD ON RAND MINING.

TO BE ISSUED JUNE 30, 1912.

To commemorate the twenty-first anniversary of the founding of this journal, a special number, distinct from the ordinary weekly issue, will be published at the end of next June. Fittingly to mark the occasion, the number will contain a comprehensive and concise account of the past history, achievements and present position of every gold mine on the Rand, illustrated and brought down to the latest possible date. It will review the industry generally as well as in its several technical aspects, and will include articles by experts on the chemical, mining and metallurgical progress and problems of the fields. A feature will be made of the personal side of the industry, and a section will be devoted to its technical and administrative leaders, enriched with portraits and other illustrations. Engineering on the Rand in all its phases, electricity, steam and air power will be treated, and the growth and progress of electric power supply will be exhaustively discussed. The gold mines of the outside districts and the tin, copper and coal industries of those districts will be dealt with thoroughly and at first hand. The great diamond industry of South Africa will have a section to itself, and here, as in the treatment of the base metal industries, the letterpress will be embellished with many striking and original illustrations. Mining in the Cape, Natal and Orange Free State Provinces will also be reviewed and the undoubtedly great mineral potentialities of those, as yet undeveloped, areas will be graphically set forth. German South-West Africa will find a place in the issue and a first-hand account of the diamonds, the copper and the tin mines of that promising field will be included. Moreover, the banks and other great financial institutions, the railways and harbours of the sub-continent will be adequately dealt with, and the whole problem of transportation as it affects the inland industrial centres will be reviewed. In this connection Capetown, Port Elizabeth, Durban, East London, Delagoa Bay and Beira will be separately and fully treated and their claims examined. Apart from mining, there will be a considerable section devoted to a description of the several subsidiary industries dependent on mining for a market. Chief among these will be cement, explosives, soap and candle-making, milling and the hundred and one activities that centre in the Rand. Rhodesia and Mozambique will be given a separate and extended treatment. The different mines will be described and illustrated, and the recent progress of the industry in those territories dealt with comprehensively and lucidly. In addition, the issue will contain a number of interesting and valuable contributions from leading men in the mining and financial world, many of whom have already sent their congratulations on the decision to issue a special commemorative number of the journal. Numerous letters received from past Rand engineers and mine managers, now resident in all parts of the world, contain offer of contributions. These will form a unique collection of valuable views and reminiscences, and will considerably enhance the interest of the volume. The work will consist of upwards of 350 pages, printed throughout on art paper. Prizes are offered to artists for the best design of a suitable and striking character, and particulars are given in another part of this issue of other valuable prizes to be awarded in connection with the number. It may be added that the work will be prepared, produced and printed in South Africa, and will aim to cover the whole field of mining in this country, and to prove a fitting monument to the great industry with which, from the beginning, the *South African Mining Journal* has been associated. The co-operation of everyone interested in the industry is being enlisted to make the venture a success, and already it promises to mark an advance on anything of its kind ever before attempted in South African illustrated journalism.

Minerals & Metals
CONTAINING
COPPER, LEAD, TIN, ANTIMONY,
ZINC, GOLD, SILVER,
ALSO
SULPHUR ORES and PYRITES,
BOUGHT AT HIGHEST PRICES
BY
KENNETH PAGE & CO.,
Telegrams & Cables: PYRITISTIC, LONDON.
Codes:—A.B.C. 5th Edition. Bedford McNeills.
42, Billiter Buildings, Billiter St.,
LONDON.
RESIDUES **SLAGS.**

IRON ORE.

WANTED
About 200 Tons of Hematite
BY THE
WITWATERSRAND CO-OPERATIVE SMELTING WORKS, LTD.
P.O. Box 809, JOHANNESBURG.

Sellers to state percentage of Iron guaranteed, and price, including delivery at Company's Siding, Robinson Mine.

OILSKINS.
HEWSON BROS., MARSHALL SQUARE.
Are Sole Agents for the Famous
"BOSS-MINER"—Fish Brand Oilskins.
Telephone 1849. **Branches all along the Reef.**

Tents, Sails, Camp Outfitting & Farmers' Goods
(All Goods Offered Subject to Being Unsold.)

E.P. TENTS, size 16 x 20, outer roof three ply, inner roof, two ply, walls three ply stayed with bamboo poles. I turn out these tents almost equal to the original, which is made in India, and costs £75 new. My price for these, thoroughly overhauled, and complete, second-hand, £17 10s. to £25 each. Bell tents, second-hand, full-sized, thoroughly overhauled and complete with pegs, pole, and mallet, 50s. each. Also every other class of tent can be had at my usual cut prices.

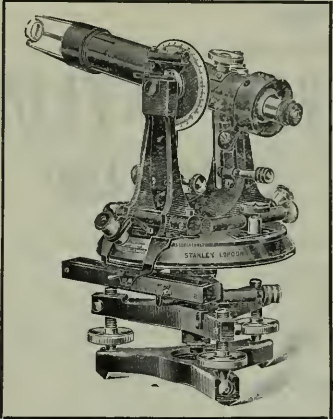
COLLAPSIBLE CAMP FURNITURE.—Folding brown canvas beds, 16/6 each. Green canvas beds, better class, 30/- each. Very strong stools, 2/6 and 5/-. Chairs, 10/6, 12/6 and 15/-. Indian Rhookee Chairs, 31/6 each. Military Lounge Chairs, 25/- each. Military Haversacks, 1/- each. "X" Tables, 16/6 to 23/6 each. Canvas Bath and Basin combined, 25/- to 33/6 each.

DRILL CABLE.—Well-known Blue Strand, $1\frac{3}{4}$in. in 300ft. coils, 10d. and 1/- per foot.

WRITE, CALL OR 'PHONE FOR LISTS.
S. B. WITHEROW
92, FOX STREET (OFF ELOFF STREET),
Box 1990. JOHANNESBURG. 'Phone 2417.

Tell advertisers you saw their advertisement in the *South African Mining Journal.*

Trade **STANLEY.** *Mark.*
THE LARGEST MANUFACTURERS OF
Surveying and Drawing Instruments in the World.



STANLEY'S COLLIERY THEODOLITE.

Drawing Office Stationery supplied on the most favourable terms. A very large Stock Kept.
Please send for our "J130" Catalogue (post and duty free) and compare our Prices with those of other FIRST-CLASS Makers.
W. F. STANLEY & CO., LTD., *Great Turnstile, HOLBORN, W.C*

REID BROTHERS (Johannesburg) LIMITED
(INCORPORATED IN SCOTLAND).
P.O. Box 802. **Telegraphic Address: "REEF."**
Telephone Nos. { **Office 96.** **Store 158.**
OFFICES: Maxwell Buildings, Harrison Street.
STORES: {Commissioner St. (East), Johannesburg, and Main Reef Road, Denver,
IMPORTERS OF
Mining Material and Engineering Appliances.

Box 796. **TEL. ADD.: "MAPUTA."**
THE DELAGOA BAY AGENCY COMPANY, LIMITED.
Landing - - Shipping - and Forwarding Agents - -
Electric Saw Mills and large Private Yard for stacking Timber, &c.
Bonded sheds for storing Damageable Goods.
Private Pier fitted with Steam Cranes.
Lighters.—Large and efficient Fleet.
BUNKERING.
Facilities for handling Cargo of every Description.
Agents for
The Transvaal Coal Owners' Assn., Ltd.

When Johannesburg was threatened by an Epidemic of Smallpox.

When Durban is threatened by Bubonic Plague

the reponsible authorities immediately use

JEYES' SPECIAL FLUID

CYLLIN

They know by practical experience that Jeyes' Disinfectants not only prevent further infection but stamp out the disease thoroughly.

Jeyes' Cyllin is the most efficient disinfectant extant. When used in proper proportions it costs less than ¼d. per gallon.

The use of Jeyes' is publicly advocated by the Government against Anthrax.

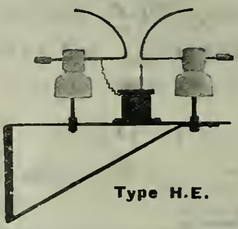
Samples and litera ure on disinfection free on application to

HIRSCH, LOUBSER & CO.,
LIMITED,
P.O. BOX 1191, JOHANNESBURG.

LIGHTNING ARRESTORS

Types:

- Horn.
- Bell.
- Disc.
- Cone.
- Wurtz.
- Roller.
- Water Jct.



Type H.E.

AND SURGE CAPS

up to 30,000 Volts.

In Case.

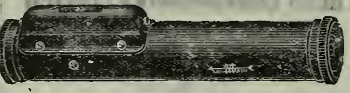
Inductionless Resistance.

Case Removed.

Union Electric Co. Ltd.

(Reg. in England).

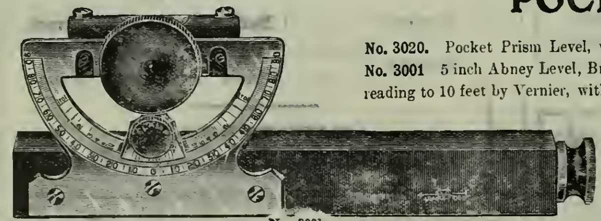
Showroom & Offices;
41—43, PERMANENT BUILDINGS.
Stores: 2, VON BRANDIS STREET.
Phone 3529; Box 3420; Telegrams, "Curling,"
JOHANNESBURG.



No. 3020

THE "SHORT & MASON"

POCKET LEVELS.



No. 3001

No. 3020. Pocket Prism Level, with Magnifier in Draw Eye-Piece. In Sole Leather Case.

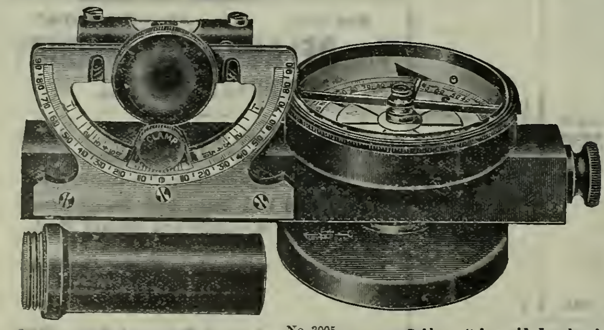
No. 3001 5 inch Abney Level, Bronze Finish, German Silver Arc divided to 90 degrees, and reading to 10 feet by Vernier, with Positive Clamp to secure Vernier. Silver Reflector and Draw Eye Tube. In Sole Leather Case.

No. 3005 Same as No. 3001, but fitted with Metal Dial Compass, Table and Socket Fitting, to enable user to take horizontal angles as well as vertical.

BOOKLETS ON REQUEST.

Obtainable at all Reputable Dealers.

———o———



No. 3005.

Manufactured by

Short & Mason, Ltd.,
"ANEROID WORKS,"
Macdonald Road, Walthamstow, N.E.

TRADE MARK.

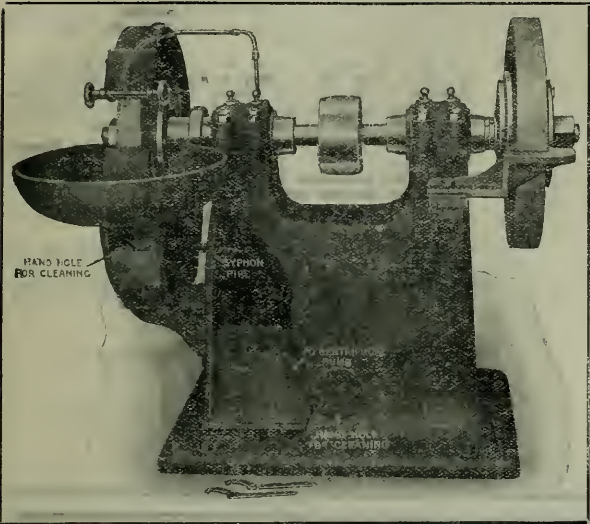
Contractors to Admiralty, War Office, India Board, Crown Agents for Colonies, Meteorological Office, Canadian, U.S. and Australian Governments, etc., etc.

Cables: "Aneroid, London."

A Convenient TOOL GRINDER that Grinds Quickly, Economically and without Splashing.

MANUFACTURED BY

MITCHELL'S EMERY WHEEL Co., Manchester.



DISTINCTIVE FEATURES.

A simple, high-class machine perfectly adapted to its work. Every feature of the machine represents the evolution of years of experience and suggestion and is confidently presented to the judgment of mechanics.

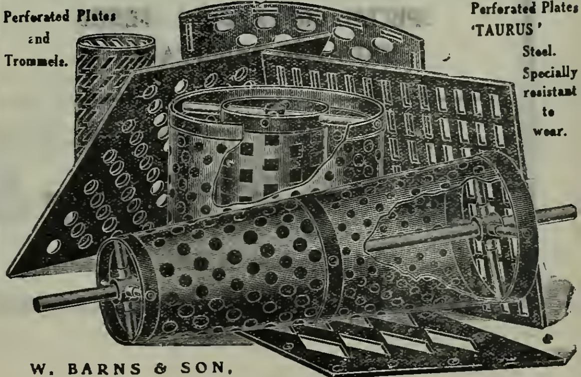
DELAY IN GRINDING OFTEN TIE UP LARGE MACHINES.

Ring up our Sole Agents:

D. DRURY & Co.,
Central House, JOHANNESBURG.
Box 3929. Phone 560.

STEEL CASTINGS
OF EVERY DESCRIPTION.
BEST CAST STEEL FOR ENGINEERS' & SMITHS' TOOLS
GRIZZLEY BARS.
EDGAR ALLEN & CO., LTD., Imperial Steel Works, **SHEFFIELD.**
(INCORPORATED IN ENGLAND).
Representative: C. F. WILLS, 5, New Club Buildings, JOHANNESBURG.

CAPPER PASS & SON, Ltd.
BEDMINSTER SMELTING WORKS,
BRISTOL, ENGLAND,
Buyers of ORES, DROSS & RESIDUES CONTAINING Tin, Copper, Lead & Antimony.
HIGHEST PRICES PAID.
Send Samples or Analysis.
Cables: "PASS," BRISTOL.


Perforated Plates and Trommels.
Perforated Plates 'TAURUS' Steel. Specially resistant to wear.

W. BARNS & SON,
GLOBE WORKS, HOLLOW

South Randfontein Deep, Limited.

(Registered under the Companies (Consolidation) Act, 1908 (England).)

Notice to Shareholders of Extraordinary General Meeting.

NOTICE IS HEREBY GIVEN that an Extraordinary General Meeting of Shareholders in the SOUTH RANDFONTEIN DEEP, LIMITED, will be held in the Board Room, Silesia Buildings, Main Street, Johannesburg, on WEDNESDAY, the 10th day of APRIL, 1912, at 3 o'clock in the afternoon, for the purpose of considering and, if thought fit, resolving to ratify confirm or adopt (with or without any modifications which may he made at the Meeting and assented to by the Purchaser), a certain Provisional Agreement bearing date the twenty-sixth day of February, 1912, and made between this Company as Vendor and the RANDFONTEIN CENTRAL GOLD MINING COMPANY, LIMITED, as Purchaser, for the acquisition by the Purchaser of the claim property, machinery, plant and certain other assets of this Company, as at 1st March, 1912, for and in consideration of the issue to the Vendor, on completion of transfer and delivery of the property sold of 75,000 Reserve Shares in the Purchaser Company of the nominal value of £1, fully paid-up, which, when issued, shall rank equally for dividend purposes with all other shares in the Purchaser Company as from the first day of January, 1912.

Should the Agreement be ratified, with or without modification, then to pass a resolution authorising the Directors to do everything needful to carry the same into effect and to transfer the property sold and receive the purchase consideration.

A copy of the Agreement lies for the inspection of Shareholders at the Johannesburg Office of the Company.

By Order of the Board.
W. M. TUDHOPE,
Transvaal Secretary.

Johannesburg Office :
Silesia Buildings, Main Street,
(P.O. Box 1125), Johannesburg,
2nd March, 1912.

Roberts Victor Diamonds Limited.

(INCORPORATED IN THE ORANGE FREE STATE.)

Amended Notice to Shareholders.

NOTICE IS HEREBY GIVEN that the Sixth Ordinary General Meeting of Shareholders in the Roberts Victor Diamonds, Limited, will be held in the Board Room, Exploration Buildings, Johannesburg, on WEDNESDAY, the 8th day of MAY, 1912, at 12 o'clock noon, for the following purposes :—

1. To receive and adopt the Statement of Accounts for the year ending 31st December, 1911, together with the Reports of the Directors and Auditors.
2. To confirm the appointment of Mr. C. F. Boswell in place of Mr. G. A. Hay (life director), resigned, and to appoint two Directors in the place of Messrs. Emrys Evans and Isaac Lewis, who retire in terms of the Articles of Association, but, being eligible, offer themselves for re-election.
3. To appoint Auditors for the ensuing year in place of Messrs. H. J. Macrae and C. J. Watson, who retire, but being eligible offer themselves for re-election, and to fix the remnneration for the past audit.
4. To transact any other business which may be transacted at an ordinary general meeting.

The Share Transfer Books of the Company in London will be closed from the 6th April, 1912, to the 15th April, 1912, both days inclusive, and the Share Transfer Books of the Office of the Company at Johannesburg will be closed from the 30th April, 1912, to the 9th May, 1912, both days inclusive.

By Order of the Board,
THE AFRICAN AND EUROPEAN INVESTMENT
COMPANY, LIMITED.
Secretaries.
per G. D. Massey

Head Office :
Lewis and Marks Building,
Johannesburg, 26th February, 1912.

Revolution in
Line and . .
Half-Tone . .
Blocks. . . .

SPECIAL CONTRACTS ENTERED
INTO FOR THE TRADE.

The Argus Printing and Publishing Company, Ltd., having just added to their already extensive PROCESS BLOCK DEPARTMENT the most up-to-date Labour-Saving methods in the production of Line and Half-Tone Work, are now in a position to undertake all classes of BLOCK WORK at Ridiculously Low Prices.

In addition to the very FINE CUT PRICES, we are also in a position to execute Blocks WITHIN TWO HOURS after receiving orders. This is a consideration in itself where Advertising and Catalogue Work require illustrations.

Save Two Profits by placing your order direct with

The Argus Printing & Publishing Co., Ltd.

Telephone 3232. P.O. Box 1014.

TN
1
S13
v.21
pt.1

S.A. mining and engineering journal

~~Physical & Applied Sci Serials~~

Engineering

PLEASE DO NOT REMOVE
CARDS OR SLIPS FROM THIS POCKET

UNIVERSITY OF TORONTO LIBRARY

ENGIN STORAGE